US Army Corps
of Engineers
Savannah District

Fort Bragg
North Carolina

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2nd Brigade Barracks Complex – Phase 1 and 2
Volume V of VI – Asbestos Surveys and Hazardous Building Materials Surveys
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May 2004

THIS SOLICITATION IS UNRESTRICTED PURSUANT TO THE "BUSINESS OPPORTUNITY DEVELOPMENT REFORM ACT OF 1988" (PUBLIC LAW 100-656)

U.S. ARMY ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
100 WEST OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 5430 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

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Asbestos Survey **March 2003**

Building No. 5430 Fort Bragg, North Carolina

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 5430 at Ft. Bragg; North Carolina conducted on 12 March 2003 by Savannah District US Army Corps of Engineers employees Tim Jones, and Mike Ruth. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 5430 is a single story structural concrete frame structure. Original walls are constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of wood framing covered with gypsum drywall. The floor system is concrete slab on grade covered with at least two layers of vinyl tiles. The roof system is of built-up design; it is constructed from the top down with stone ballast over multi-layered tar and felt membrane over foam-glass insulation over a tar layer on the concrete roof deck. The buildings primary use is as an office building. Rooms on the building floor plans are arbitrarily numbered for identification in this report only.

Description of study

Investigation

All accessible areas of Building No. 5430 were visually inspected for suspected asbestos containing materials (ACM) by accredited inspectors. Bulk samples of all suspect ACM's were collected. This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspectors. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 5430 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

a. *TSI Pipe Runs and Fittings, Domestic Water:* The insulation on the domestic water piping in the mechanical room and throughout the building is insulated with a hard cloth wrapped brown fibrous material that contains asbestos. The fittings on the domestic water piping are made of a field installed and molded highly friable material which contains asbestos. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations and homogeneous area locations).

b. *TSI Pipe Runs and Fittings, HVAC:* HVAC heating piping within the mechanical room is covered with a cloth wrapped white corrugated material similar to Air Cell brand insulation that contains high levels of asbestos. The fittings are similar to those on the domestic water lines and are made of a field installed molded

highly friable material assumed to contain asbestos. The HVAC heating piping within the remainder of the building is not insulated. Piping in three HVAC piping pits adjacent to Building 5430 is covered with TSI that is assumed to contain asbestos. (Note: underground HVAC piping outside of the pipe pits is not estimated in this report). - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations and homogeneous area locations, excluding exterior pipe pits).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 5430 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* Vinyl floor tiles and associated mastic in the entire building with the exception of the mechanical room are assumed to contain asbestos. There are two layers of floor tiles in the majority of the building. Room R6 has decorative wood flooring installed over the tile. - (Refer to Tables 2 and 3 for specific information).

b. *Roofing Materials:* The roof of building 5430 is constructed of a multi-layered tar and felt membrane over foam-glass insulation. The tar and felt membrane layer, as well as all flashing materials and cements at the roof penetrations and edges, contains or is assumed to contain asbestos. A tar layer applied to the concrete roof deck, under the insulation, was sampled and analyzed and found to be non-asbestos containing. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations).

c. *Mastics:* The adhesive mastic used to attach the metal stickpins to the underside of the concrete roof deck contains asbestos. These stickpins are used to mount the fiberglass insulation batting to the roof deck. They are approximately 2" square and located approximately 1 foot apart. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

No asbestos containing surfacing material was located in Building 5430.

Conclusions

The following materials found at Building No. 5430 contain positive amounts of asbestos:

a. *Floor Tile & Mastic:* All floor tiles and or mastic are assumed to contain asbestos.

b. *Roofing Materials:* All layers of the roof membrane and flashing above the expandable polystyrene contain or are assumed to contain asbestos.

c. *TSI Pipe Runs and Fittings:* TSI pipe runs and fittings on the domestic water throughout the building and HVAC heating piping within the mechanical room contain or are assumed to contain asbestos.

d. *Mastics:* The adhesive mastic used to attach the metal stickpins to the underside of the concrete roof deck contains asbestos.

List of Tables

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Appendices

TABLE 1
SUSPECT ACM SAMPLES
Ft. BRAGG, BUILDING 5430

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
5430-1-1	Drywall joint compound & textured surfacing	Corridor 2 wall	None
5430-1-2	2’ X 2’ ceiling tile	Corridor 1	None
5430-1-3	2’ X 2’ ceiling tile	Corridor 1	None
5430-1-4	**Stickpin mastic**	**Corridor 1, applied to roof deck**	**3% Chrysotile**
5430-1-5	TSI pipe elbow 3”	Room 3, domestic water	None
5430-1-6	**TSI pipe run 4”**	**Room 3, domestic water**	**2% Chrysotile**
5430-1-7	**TSI pipe run 3”**	**Room 4, domestic water**	**2% Chrysotile**
5430-1-8	**Stickpin mastic**	**Room 11, applied to roof deck**	**5% Chrysotile**
5430-1-9	Ceiling tile	Room 5	None
5430-1-10	Drywall joint compound & textured surfacing	Corridor 3 wall	None
5430-1-11	2’ X 4’ ceiling tile	Room 8	None
5430-1-12	Drywall joint compound & textured surfacing	Corridor2 wall	None
5430-M-13	**TSI pipe elbow 3”**	**Room 2, Mechanical room, domestic water**	**2% Chrysotile**
5430-M-14	**TSI pipe run 3”**	**Room 2, Mechanical room, domestic water**	**2% Chrysotile**
5430-M-15	**TSI pipe run 4”**	**Room 2, Mechanical room, HVAC piping**	**60% Chrysotile**
5430-M-16	TSI pipe elbow 4”	Room 2, Mechanical room, HVAC piping	<1% Chrysotile
5430-R-17	**Multi-layered flashing, silver coated**	**Roof, at roof curb for vent**	**5% Chrysotile**
5430-R-18	**Flashing cement, brown painted**	**Roof, applied to metal roof vent**	**5% Chrysotile**
5430-R-19	**Built up roof membrane**	**Main roof field**	**3% Chrysotile**
5430-R-20	Roofing tar	Main roof field, under sample R-19 and insulation, applied to roof deck	None
5430-R-21	Canvas type flashing	Roof, at roof curb for vent, outer layer only	<1% Chrysotile

5430-R-22	**Flashing felt**	**Roof, at roof curb for vent, inner layer, under R-21**	**4% Chrysotile**
5430-R-23	**Flashing cement**	**Roof, at roof curb for vent, under R-22**	**10% Chrysotile**
5430-R-24	**Multi-layer flashing/built-up roofing**	**Edge of roof field**	**10% Chrysotile**
5430-R-25	**Multi-layer flashing/built-up roofing**	**Edge of roof field, QC duplicate of R-24**	**15% Chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
Ft. BRAGG, BUILDING 5430

Material Description	UNITS	Area Descriptions								
		APPLICABLE SAMPLE NUMBERS	EXTERIOR	INTERIOR	MECHANICAL ROOM	ROOF	EXTERIOR PIPE VAULTS ASSUMED +			TOTALS
Floor Tile & Mastic	S.F.	Assumed Asbestos		2150						2150
Built-up Roofing, Roof Field	S.F.	R-19 R-24 R-25				2600				2600
Roof Vent Flashing Materials	S.F.	R-17 R-18 R-22 R-23				150				150
TSI 3” OD Pipe Run	L.F.	1-7 M-14		50	70					120
TSI 3” OD Pipe Fittings	Ea.	1-5 M-13		7	30					37
TSI 4” OD Pipe Run	L.F.	1-6 M-15		25	40		30			95

TSI 4” OD Pipe Fittings	Ea.	M-16		7	15		12			34
TSI 5” OD Pipe Run	L.F.	Assumed Asbestos			45					45
TSI 5” OD Pipe Fittings	Ea.	Assumed Asbestos			15					15
TSI 6” OD Pipe Run	L.F.	Assumed Asbestos					30			30
TSI 6” OD Pipe Fittings	Ea.	Assumed Asbestos					10			10
TSI 8” OD Pipe Run	L.F.	Assumed Asbestos					60			60
TSI 8” OD Pipe Fittings	Ea.	Assumed Asbestos					27			27
TSI 12” OD Pipe Run	L.F.	Assumed Asbestos					55			55
TSI 12” OD Pipe Fittings	Ea.	Assumed Asbestos					17			17
TSI >18” OD Pipe Run	L.F.	Assumed Asbestos					15			15
TSI >18” OD Pipe Fittings	Ea.	Assumed Asbestos					7			7
Stickpin Mastic	S.F.	1-4 1-8		65						65

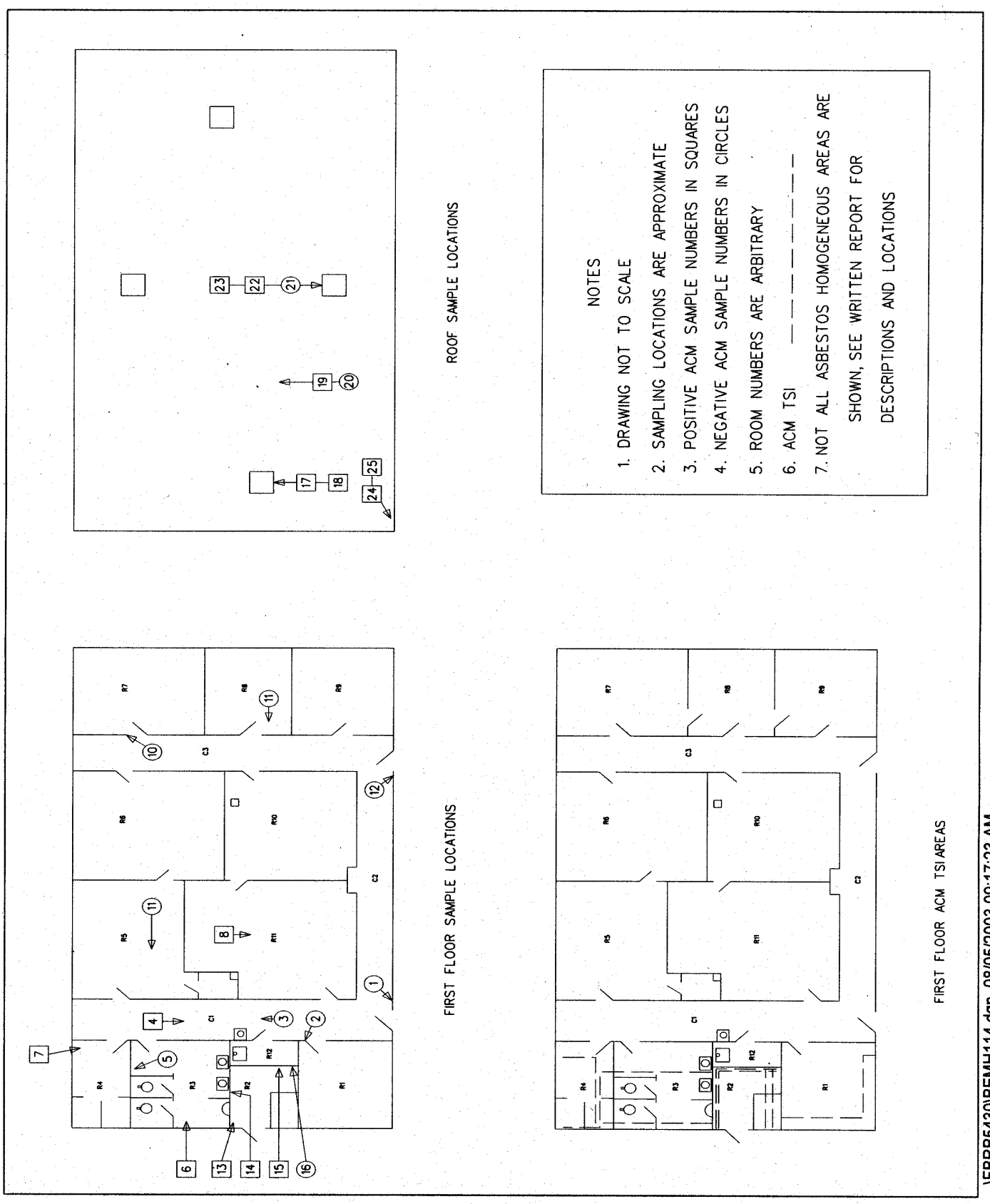
S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot, Ea. = Each

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
Ft. BRAGG, BUILDING 5430

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
TSI	Pipe Run Insulation	Yes 2-60%	420 L.F.	Friable	Good-Significantly Damaged	High
TSI	Pipe Fittings	Assumed	147 Ea.	Friable	Good-Significantly Damaged	High
Miscellaneous	Floor Tile & Mastic	Assumed	2150 S.F.	Non-friable	Good	Low
Miscellaneous	Built-up Roof Membrane	Yes 3-15%	2600 S.F.	Non-friable	Good	Low
Miscellaneous	Roof Vent Flashing Materials	Yes 4-10%	150 S.F.	Non-friable	Good	Low
Miscellaneous	Stickpin Mastic	Yes 3-5%	65 S.F.	Friable	Good	Low

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot, Ea. = Each

Figure 1


NOTES
1. DRAWING NOT TO SCALE
2. SAMPLING LOCATIONS ARE APPROXIMATE
3. POSITIVE ACM SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ACM SAMPLE NUMBERS IN CIRCLES
5. ROOM NUMBERS ARE ARBITRARY
6. ACM TSI
7. NOT ALL ASBESTOS HOMOGENEOUS AREAS ARE SHOWN, SEE WRITTEN REPORT FOR DESCRIPTIONS AND LOCATIONS
ROOF SAMPLE LOCATIONS
FIRST FLOOR SAMPLE LOCATIONS
FIRST FLOOR ACM TSI AREAS
...\FBRB5430\BEMH114.dgn 08/05/2003 09:17:23 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

4/2/2003

Subject:

Hygeia Project Number: A0303064
Client Project Number/Name: Job No 7758 /Ft Bragg Bldg 5430

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 3/18/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP# 102087-0
Texas Dept. of Health # 30-0232
Commonwealth of Virginia # 3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0303064
Client Project Number/Name: Job No 7758 / Ft Bragg Bldg 5430

Analyzed: 3/18/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-1	A0303064-01	White	Cons.	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-2	A0303064-02	Brown	Cons.	Yes						40%	20%		40%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-3	A0303064-03	Brown	Cons.	Yes						40%	20%		40%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-4	A0303064-04	Brown	Cons.	Yes	3%								97%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-5	A0303064-05	Brown	Cons.	Yes							70%		30%	

Comment: No Asbestos Detected.

Hygeia Project Number: A0303064
Client Project Number/Name: Job No 7758 / Ft Bragg Bldg 5430

Analyzed: 3/18/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-6	A0303064-06	Brown	Cons.	Yes	2%					48%			50%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-7	A0303064-07	Green	Cons.	Yes	2%					48%			50%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-8	A0303064-08	Green	Cons.	Yes	5%								95%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-9	A0303064-09	Brown	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-10	A0303064-10	White	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0303064
Client Project Number/Name: Job No 7758 / Ft Bragg Bldg 5430

Analyzed: 3/18/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-11	A0303064-11	Brown	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-1-12	A0303064-12	White	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-M-13	A0303064-13	Brown	Cons.	Yes	2%						48%		50%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-M-14	A0303064-14	Brown	Cons.	Yes	2%					48%			50%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-M-15	A0303064-15	Gray	Cons.	Yes	60%					10%			30%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0303064
Client Project Number/Name: Job No 7758 / Ft Bragg Bldg 5430

Analyzed: 3/18/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-M-16	A0303064-16	Gray	Fibrous	Yes	<1%						70%		30%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-R-17	A0303064-17	Black	Cons.	Yes	5%					20%	20%		55%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-R-18	A0303064-18	Black	Cons.	Yes	5%								95%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-R-19	A0303064-19	Black	Cons.	Yes	3%					47%			50%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-R-20	A0303064-20	Black	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-R-21	A0303064-21	Black	Cons.	Yes	<1%					10%			90%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-R-22	A0303064-22	Black	Cons.	Yes	4%					16%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-R-23	A0303064-23	Black	Cons.	Yes	10%					10%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-R-24	A0303064-24	Black	Cons.	Yes	10%					10%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5430-R-25	A0303064-25	Black	Cons.	Yes	15%					10%			75%	

Comment: **Asbestos Detected.**

abbreviations:

Chr. = chrysotile	cell = cellulose	per = perlite	OF = Other Fibers
Am. = amosite	glass = fibrous glass	ver = vermiculite	ONF = Other Non-Fibers
Cro. = crocidolite	syn = synthetic	MF = Mineral filler	Cons = Consolidated
An. = anthophyllite	sty = styrene foam	B/F = Binder / filler	
T/A = tremolite/actinolite	det = detected	**NAD = No asbestos detected**	

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project: Ft Bragg BLDG 5430	Job No.: 7758
Sampler: Tim Jones	Analysis: PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
3/12/03	5430-1-1	45487	Wall texture
	5430-1-2	45488	C.T. - New
	5430-1-3	45489	C.T. - Even
	5430-1-4	45490	stick-pin mastic
	5430-1-5	45491	TSI - elbow
	5430-1-6	45492	TSI
	5430-1-7	45493	TSI
	5430-1-8	45494	STICK-PIN MASTIC
	5430-1-9	45495	C.T. - VERTICAL drop
	5430-1-10	45496	WALL TEXTURE
	5430-1-11	45497	C.T.
	5430-1-12	45498	WALL TEXTURE
	5430-M-13	45499	TSI - elbow
	5430-M-14	45500	TSI
	5430-M-15	45501	Air cell
	5430-M-16	45502	TSI elbow
	5430-R-17	45503	flashing
	5430-R-18	45504	flashing
	5430-R-19	45505	BUR
	5430-R-20	45506	felt/tar/paper
	5430-R-21	45507	felt/CANVAS
↓	5430-R-22	45508	felt-type sheet

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	3-15-03	1400	Thelma Patterson	03/17/03	1300
Thelma Patterson	03-17-03	~~0700~~ 1030		3/17/03	

Comments: Fax results to Tim Jones @ 910-436-9483

Room #204

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project: Ft. Braggs BLDG 5430	Job No.: 7758
Sampler: Tim Jones	Analysis: PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
3/12/03	5430-R-23	45509	BUR
↓	5430-R-24	45510	tar like substance BUR
	5430-R-25	45511	flashing / BUR

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	3-15-03	1400	Thalas Kattamatay	03-17-03	1302
Thalas Kattamatay	03-17-03	1030 ~~0900~~	C. Ell	3/18/03	

Comments: Fax results to Tim Jones @ 910-436-9483

Appendix C

Certifications and Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

Georgia Institute of Technology

This is to certify that

Michael Stephen Ruth

has attended and satisfactorily passed an examination covering the contents of a Continuing Education Course entitled:

Inspecting Buildings for Asbestos Containing Materials (Initial Course for Building Inspectors)

meeting the Federal EPA AHERA Model Accreditation Plan requirements for Building Inspectors (TSCA Title II).

October 16-18, 2000
Dates of Attendance

October 18, 2000
Examination Date

October 18, 2001
Expiration Date

Georgia Tech Research Institute
Electro-Optics, Environment and Materials Laboratory
Atlanta, Georgia 30332
Phone: (404) 894-7430; FAX: (404) 894-1267

578-78-6898
Social Security Number

Robert D. Schmitter
Course Director

2897
Certificate Number

© GOES 440

LITHO IN U.S.A.

Medical University of South Carolina

College of Health Professions

Program in Environmental Health Sciences

19 Hagood Avenue, Charleston, South Carolina 29425 (843) 792-5315

Certifies that

MICHAEL RUTH

Attended and Satisfactorily Completed

Asbestos Inspector Refresher

conducted October 31, 2002 through October 31, 2002
and passed an exam on October 31, 2002.

AbInsp-r27120-17203	4	578-78-6898	T.A. Rowland, III
Certificate Number	Contact Hours	ID Number	Program Director
October 31, 2002	October 30, 2003		T. A. Rowland III
Exam Date	Certificate Expires		Instructor

AUGET LARGIENDO
UNIV. MED. CAR. AUS. 1824

This certifies that the above recipient has completed the requisite training for Asbestos Certification under TSCA Title II.

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Hazardous Building Materials Survey

Building No. 5430 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

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Building No. 5430 Fort Bragg, North Carolina

by Timothy A. Jones

Final Report

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Prepared for **US Army Corps of Engineers**
Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building No. 5430 is a single story structural concrete frame structure. Original walls are constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of wood framing covered with gypsum drywall. The floor system is concrete slab on grade covered with at least two layers of vinyl tiles. The roof system is of built-up design; it is constructed from the top down with stone ballast over multi-layered tar and felt membrane over foam-glass insulation over a tar layer on the concrete roof deck. The buildings primary use is as an office building.

Description of study

Investigation

This report documents the hazardous building materials survey of Building No. 5430 at Ft. Bragg, North Carolina conducted on 12 March 2003 by USACE Savannah District employees Tim Jones and Mike Ruth and includes only building materials located at the time of inspection. This survey was conducted in general accordance with the Statement of Services for Hazardous Building Material Inspections developed by Ray Willingham, retired, USACE Savannah District. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in chemical type fire suppression systems; smoke detectors; and lead building materials excluding lead based paint. Other hazardous building materials not listed above may also be included at the discression of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 5430 is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Lead Building Materials:* Inspection of the building revealed lead in the plumbing drainage and vent piping system used as pipe joints. Lead flashings are used at the pipe penetrations through the roof. One lead flashing was located on a vent pipe in the mechanical room near the roof deck. Details are outlined in Table 2.

c. *Compressed Refrigerant Gas:* Seven window air-conditioning units were located in Building 5430. One drinking fountain was located in Building 5430. All of these units are assumed to contain refrigerant gas that should be recovered prior to demolition.

d. *Above and Underground Storage Tanks:* None of either were located associated with Building 5430.

List of Tables

Tables

TABLE 1
Ft. BRAGG BUILDING 5430
FLUORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Interior	26	4 bulb, 4 foot long fluorescent fixtures with two 8” X 2” ballasts each

TABLE 2
Ft. BRAGG BUILDING 5430
LEAD BUILDING COMPONENTS

BUILDING COMPONENT	DESCRIPTION	LOCATION	ESTIMATED NUMBER
Hot poured lead pipe joint	In plumbing drainage, waste and vent piping	Under slab and in plumbing chase walls	50-100
Lead Pipe Flashings	Roof flashing	Roof & mechanical room	6

Savannah District
Environmental and Materials Unit

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Hazardous Building Materials Survey

Building No. 5528 Fort Bragg, North Carolina

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Building No. 5528 Fort Bragg, North Carolina

by Timothy A. Jones

Final Report

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Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building 5528 is a combination of a single three-story barracks wing and an attached single-story section used as a kitchen and dining area area. The building is of structural concrete framework with original walls constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of a combination of wood framing covered with gypsum drywall. The floor systems are concrete slabs mostly covered with two layers of vinyl tiles. The roof systems are of built-up design; they are constructed from the top down with cement panel ballast attached to expandable polystyrene insulation over rubber roof membrane over expandable polystyrene insulation on the concrete roof deck.

Description of study

Investigation

This report documents the hazardous building materials survey of Building No. 5528 at Ft. Bragg, North Carolina conducted on 17-19 March 2003 by USACE Savannah District employees Tim Jones and Mike Ruth. This report includes only building materials located at the time of inspection. This survey was conducted in general accordance with the Statement of Services for Hazardous Building Material Inspections developed by Ray Willingham, retired, USACE Savannah District. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in chemical type fire suppression systems; smoke detectors; and lead building materials excluding lead based paint. Other hazardous building materials not listed above may also be included at the discression of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 5528 is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Lead Building Materials:* Inspection of the building revealed lead in the plumbing drainage and vent piping system used as pipe joints. Lead joints are used to secure the stairwell handrails to the concrete floors and stairs. Details are outlined in Table 2.

c. *Compressed Refrigerant Gas:* Four drinking fountains were located in Building 5528. Three window air conditioners were located in the barracks wing rooms. Three walk in refrigerators/freezers were located, one inside the kitchen area and two outside of the kitchen area. One refrigerator compressor system thought to be associated with the inside walk in refrigerator/freezer is located outside the kitchen area near the loading dock. Several icemakers and food cooling systems are located within the kitchen and dining areas. These units are assumed to contain refrigerant gas that should be recovered prior to demolition if the units are not to be relocated.

d. *Mercury Thermostats and Switches:* Eighty-eight mercury-containing thermostats or were located in Building 5528. One is located in each barracks sleeping room and one in each office room in the barracks wing. Each thermostat contains two mercury bulbs.

e. *Smoke Detectors:* Five smoke detectors were located in Building 5528. Two were located on each the second and third floors and one on the first floor of the barracks wing.

f. *Battery Backup Alarm Systems:* One alarm system containing Lithium batteries for electrical power backup are located in Building 5528 at the arms room.

g. *Fire Suppression Systems:* Four built in fire suppression systems for the kitchen exhaust hoods were located in the kitchen and serving line areas. The systems contain Ansul R101 brand of suppressant in compressed cylinders.

h. *Fire Alarm Systems:* Two fire alarm panels were located that may contain battery backup systems and electronic circuit boards, one in the kitchen area and one on the first floor of the barracks wing.

i. *Transformers:* One large pad mounted transformer was located outside of the kitchen area near the loading dock.

j. *Grease Traps:* One in ground grease trap was located outside the kitchen by the loading dock. Two above ground grease traps were located inside the kitchen area near the tray wash and dishwasher.

List of Tables

Tables

TABLE 1
Ft. BRAGG BUILDING 5528
FLUORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Barracks wing corridors	61	2 bulb, 2 foot square fluorescent fixtures with one 2” X 6” ballast each
Barracks wing NCO room restrooms	13	2 bulb, 2 foot long fluorescent fixtures with single ballast each
Barracks wing & Kitchen/Dining Area	155	2 bulb, 4 foot long fluorescent fixture with one 8” X 2” ballast
Barracks wing & Kitchen/Dining Area	80	4 bulb, 4 foot long fluorescent fixtures with two 8” X 2” ballasts each
Barracks wing large restrooms	50	1 bulb, 4 foot long fluorescent fixture with one 8” X 2” ballast
Basement	5	2 bulb, 8 foot long fluorescent fixture with one 8” X 2” ballast
Basement	4	2 bulb, 4 foot long fluorescent fixture with one 8” X 2” ballast
Basement	2	Screw in fluorescent bulbs
Barracks wing & Kitchen/Dining Area	8	Battery backup exit lights
Barracks wing & Kitchen/Dining Area	14	Battery backup emergency lights
Barracks wing & Kitchen/Dining Area	13	Battery backup combination emergency/exit lights
Exterior	8	1 foot square possible mercury lights

TABLE 2
Ft. BRAGG BUILDING 5528
LEAD BUILDING COMPONENTS

BUILDING COMPONENT	DESCRIPTION	LOCATION	ESTIMATED NUMBER
Hot poured lead pipe joint	In plumbing drainage, waste and vent piping and storm drains	Underground. In crawlspace and exterior at downspouts	150-200
Lead stair rail mounts	Hot poured lead joints	At concrete where stair rail mounts to stairs and landings	90-100

TABLE 3
Ft. BRAGG BUILDING 5528
MISCELLANEOUS HAZARDOUS BUILDING MATERIALS

AREA IDENTIFICATION	NUMBER PRESENT	DESCRIPTION OF MATERIAL
Barracks wing corridors & Admin area	4	Refrigerated drinking fountains containing refrigerant gas
Barracks Wing rooms	3	Window air conditioners containing refrigerant gas
Kitchen area	3	Walk in refrigerators/freezers containing refrigerant gas
Kitchen & Dining areas	Several	Ice makers and food coolers containing refrigerant gas
Kitchen & Serving areas	4	Fire suppression systems, Ansul R101
Barracks wing & Kitchen	2	Fire alarm panels
Exterior, near kitchen	1	Pad mounted transformer
Exterior & kitchen	3	Grease traps
Barracks wing rooms	88	Mercury-containing thermostats with two mercury bulbs each
Barracks wing corridors	5	Smoke detectors
Basement area arms room	1	Battery backup alarm systems

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Hazardous Building Materials Survey

Building No. 5626 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

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Building No. 5626 Fort Bragg, North Carolina

by Timothy A. Jones

Final Report

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Prepared for **US Army Corps of Engineers**
Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building 5626 is a combination of a single three-story barracks wing and an attached single-story section used as an administrative office area. The building is of structural concrete framework with original walls constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of a combination of wood framing covered with gypsum drywall. The floor systems are concrete slabs mostly covered with two layers of vinyl tiles. The roof systems are of built-up design; they are constructed from the top down with cement panel ballast attached to expandable polystyrene insulation over rubber roof membrane over expandable polystyrene insulation on the concrete roof deck.

Description of study

Investigation

This report documents the hazardous building materials survey of Building No. 5626 at Ft. Bragg, North Carolina conducted on 28 March 2003 by USACE Savannah District employees Tim Jones and Mike Ruth. This report includes only building materials located at the time of inspection. This survey was conducted in general accordance with the Statement of Services for Hazardous Building Material Inspections developed by Ray Willingham, retired, USACE Savannah District. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in chemical type fire suppression systems; smoke detectors; and lead building materials excluding lead based paint. Other hazardous building materials not listed above may also be included at the discression of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 5626 is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Lead Building Materials:* Inspection of the building revealed lead in the plumbing drainage and vent piping system used as pipe joints. Lead joints are used to secure the stairwell handrails to the concrete floors and stairs. Details are outlined in Table 2.

c. *Compressed Refrigerant Gas:* Five drinking fountains and 19 window air conditioners were located in Building 5626. Four of the air conditioners are stored in the basement. These units are assumed to contain refrigerant gas that should be recovered prior to demolition.

d. *Mercury Thermostats and Switches:* Eighty-seven mercury-containing thermostats or were located in Building 5626. One is located in each barracks sleeping room and one in each office room except one in the barracks wing. Each thermostat contains two mercury bulbs.

e. *Smoke Detectors:* Five smoke detectors were located in Building 5626. Two were located on each the second and third floors and one on the first floor of the barracks wing.

f. *Battery Backup Alarm Systems:* Three alarm systems containing Lithium batteries for electrical power backup are located in Building 5626, one at each arms room.

g. *Fire Alarm Control Panel:* A fire alarm control panel possibly containing a battery and printed circuit boards is located on the first floor of the barracks wing.

List of Tables

Tables

TABLE 1
Ft. BRAGG BUILDING 5626
FLUORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Barracks wing corridors	58	2 bulb, 2 foot square fluorescent fixtures with one 2” X 6” ballast each
Barracks wing NCO room restrooms	13	2 bulb, 2 foot long fluorescent fixtures with single ballast each
Barracks wing & admin offices	145	2 bulb, 4 foot long fluorescent fixture with one 8” X 2” ballast
Barracks wing & admin offices	27	4 bulb, 4 foot long fluorescent fixtures with two 8” X 2” ballasts each
Barracks wing large restrooms	47	1 bulb, 4 foot long fluorescent fixture with one 8” X 2” ballast
Basement	9	2 bulb, 8 foot long fluorescent fixture with one 8” X 2” ballast
Basement	140	Loose 4 foot fluorescent bulbs in cases
Basement	132	Loose 8 foot fluorescent bulbs in cases
Barracks wing & admin offices	5	Battery backup exit lights
Barracks wing & admin offices	16	Battery backup emergency lights
Barracks wing & admin offices	5	Battery backup combination emergency/exit lights
Exterior	10	1 foot square possible mercury lights

TABLE 2
Ft. BRAGG BUILDING 5626
LEAD BUILDING COMPONENTS

BUILDING COMPONENT	DESCRIPTION	LOCATION	ESTIMATED NUMBER
Hot poured lead pipe joint	In plumbing drainage, waste and vent piping and storm drains	Underground. In crawlspace and exterior at downspouts	150-200
Lead stair rail mounts	Hot poured lead joints	At concrete where stair rail mounts to stairs and landings	90-100

TABLE 3
Ft. BRAGG BUILDING 5626
MISCELLANEOUS HAZARDOUS BUILDING MATERIALS

AREA IDENTIFICATION	NUMBER PRESENT	DESCRIPTION OF MATERIAL
Barracks wing corridors & Admin area	5	Refrigerated drinking fountains containing refrigerant gas
Barracks wing rooms	87	Mercury-containing thermostats with two mercury bulbs each
Barracks wing corridors	5	Smoke detectors
Barracks wing first floor	1	Fire alarm control panel
Barracks wing & Admin area arms rooms	3	Battery backup alarm systems

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 5630 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

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Asbestos Survey **March 2003**

Building No. 5630 Fort Bragg, North Carolina

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 5630 at Ft. Bragg; North Carolina conducted on 12 March 2003 by Savannah District US Army Corps of Engineers employees Tim Jones, and Mike Ruth. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 5630 is a single story structural concrete frame structure. Original walls are constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of wood framing covered with gypsum drywall. The floor system is concrete slab on grade covered with two layers of vinyl tiles. The roof system is of built-up design; it is constructed from the top down with stone ballast over multi-layered tar and felt membrane over foam-glass insulation on the concrete roof deck. The buildings primary use is as an office building. Rooms on the building floor plans are arbitrarily numbered for identification in this report only.

Description of study

Investigation

All accessible areas of Building No. 5630 were visually inspected for suspected asbestos containing materials (ACM) by accredited inspectors. Bulk samples of all suspect ACM's were collected. This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspectors. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 5630 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

a. *TSI Pipe Runs and Fittings, Domestic Water:* The insulation on the domestic water piping in the mechanical room and throughout the building is a hard cloth wrapped brown fibrous material that contains asbestos. The fittings on the domestic water piping are made of a field installed and molded highly friable material which is assumed to contain asbestos. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations and homogeneous area locations).

b. *TSI Pipe Runs and Fittings, HVAC:* HVAC heating piping within the mechanical room is covered with a cloth wrapped white corrugated material similar to Air Cell brand insulation that is assumed to contain asbestos. The fittings are similar to those on the domestic water lines and are made of a field installed molded

highly friable material that is assumed to contain asbestos. The HVAC heating piping within the remainder of the building is not insulated. - (Refer to Tables 2 and 3 for specific information and Figure 1 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 5630 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All vinyl floor tiles and associated mastic in the entire building are assumed to contain asbestos. Two layers of tiles are present throughout the building. - (Refer to Tables 2 and 3 for specific information).

b. *Roofing Materials:* The roof of building 5630 is constructed of a multi-layered tar and felt membrane over foam-glass insulation. The tar and felt flashing materials and cements at the roof penetrations contain or are assumed to contain asbestos. The main roof field was analyzed and found to be non-asbestos containing. The flashing area around the perimeter of the roof, from the edge in to approximately 3 feet, is assumed to contain asbestos based on inspections of similar buildings. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations and homogeneous area locations).

c. *Mastics:* The adhesive mastic used to attach the metal stickpins to the underside of the concrete roof deck contains asbestos. These stickpins are used to mount the fiberglass batting insulation to the roof deck and are each approximately 2” square and placed approximately 12” apart. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

No asbestos containing surfacing material was located in Building 1412.

Conclusions

The following materials found at Building No. 5630 contain positive amounts of asbestos:

a. *Floor Tile & Mastic:* Floor tiles and or mastic are assumed to contain asbestos.

b. *R*oof *Flashing Materials:* Flashing felts and cement around the roof penetrations and roof edge contain asbestos

c. *TSI Pipe Runs and Fittings:* TSI pipe runs and fittings on the domestic water and HVAC heating piping contain asbestos.

d. *Mastics:* The adhesive mastic used to attach the metal stickpins to the underside of the concrete roof deck contains asbestos.

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List of Figures

Appendices

TABLE 1
SUSPECT ACM SAMPLES
Ft. BRAGG, BUILDING 5630

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
5630-1-1	**3" TSI pipe run**	**Room 12, domestic water piping**	**Total 2% Chrysotile, 25% Chrysotile on white fibrous layer**
5630-1-2	Window glazing compound	Room 12, interior side of exterior window	None
5630-1-3	Drywall joint compound	Room 12, at entry door	None
5630-1-4	Ceiling tile – new	Corridor 3	None
5630-1-5	Ceiling tile – old	Corridor 3	None
5630-1-6	**Stick pin mastic**	**Corridor 3, on roof deck**	**6% Chrysotile**
5630-1-7	Drywall joint compound	Corner between Corridors 2 & 3	None
5630-1-8	TSI pipe elbow	Room 9, domestic water piping	None
5630-1-9	Window glazing compound	Room 5, interior side of exterior window	None
5630-1-10	Ceiling tile – old	Corridor 1	None
5630-1-11	Ceiling tile- new	Corridor 1	None
5630-1-12	Drywall joint compound	Corridor 1 wall	None
5630-R-13	**Flashing cement**	**Roof, on metal roof vent**	**5% Chrysotile**
5630-R-14	**Multi-layer flashing**	**Roof, at curb for metal vent**	**5% Chrysotile**
5630-R-15	Built-up roof membrane	Roof, main roof field	None
5630-1-16	Window glazing compound	Room 12, interior side of exterior window, QC duplicate of sample 1-2	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
Ft. BRAGG, BUILDING 5630

Material Description	UNITS	Area Descriptions								
		APPLICABLE SAMPLE NUMBERS	EXTERIOR	INTERIOR	MECHANICAL ROOM	ROOF				TOTALS
Floor Tile & Mastic	S.F.	Assumed Asbestos		2150						2150
Roof Flashing Materials	S.F.	R-13 R-14				800				800
TSI 3” OD Pipe Run	L.F.	1-1		70	34					104
TSI 3” OD Pipe Fittings	Ea.	Assumed Asbestos		20	12					32
TSI 4” OD Pipe Run	L.F.	Assumed Asbestos		25	15					40
TSI 4” OD Pipe Fittings	Ea.	Assumed Asbestos		7	10					17
Stickpin Mastic	S.F.	1-6		65						65

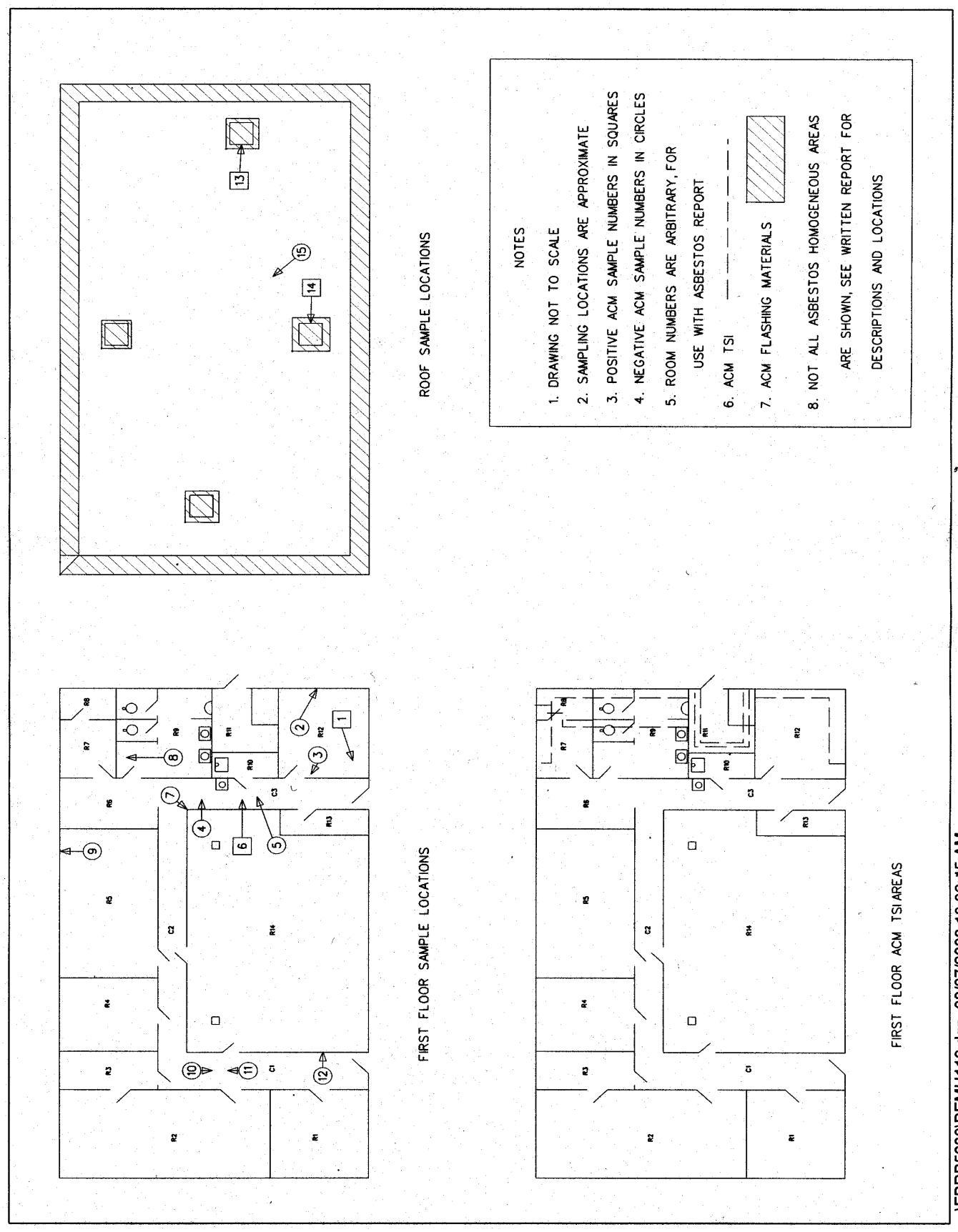
S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot, Ea. = Each

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
Ft. BRAGG, BUILDING 5630

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Floor Tile & Mastic	Assumed	2150 S.F.	Non-friable	Good	Low
Miscellaneous	Roof Flashing Materials	Yes 5%	800 S/F.	Non-friable	Good	Low
Miscellaneous	Stickpin Mastic	Yes 6%	65	Friable	Good	Low
TSI	Pipe Run	Yes 2-25%	144 L.F.	Friable	Good-Significantly Damaged	High
TSI	Pipe Fittings	Assumed	49 Ea.	Friable	Good-Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot, Ea. = Each

Figure 1


NOTES
1. DRAWING NOT TO SCALE
2. SAMPLING LOCATIONS ARE APPROXIMATE
3. POSITIVE ACM SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ACM SAMPLE NUMBERS IN CIRCLES
5. ROOM NUMBERS ARE ARBITRARY, FOR USE WITH ASBESTOS REPORT
6. ACM TSI
7. ACM FLASHING MATERIALS
8. NOT ALL ASBESTOS HOMOGENEOUS AREAS ARE SHOWN, SEE WRITTEN REPORT FOR DESCRIPTIONS AND LOCATIONS
ROOF SAMPLE LOCATIONS
FIRST FLOOR SAMPLE LOCATIONS
FIRST FLOOR ACM TSI AREAS
...\FBRB5630\BEMH119.dgn 08/07/2003 10:36:45 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

4/2/2003

Subject:
Hygeia Project Number: A0303059
Client Project Number/Name: Job # 7759 /Fort Bragg Bldg 5630

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 3/18/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP# 102087-0
Texas Dept. of Health # 30-0232
Commonwealth of Virginia # 3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0303059

Client Project Number/Name: Job # 7759 / Fort Bragg Bldg 5630

Analyzed: 3/19/2003 by JC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-1	A0303059-01	Multi	Layered	No	2%					58%			40%	

Comment: White Fibrous Layer: 25% Chrysotile. Rest: NAD. Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-2	A0303059-02	White	Caulky	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-3	A0303059-03	White	Flaky	Yes						10%			90%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-4	A0303059-04	White	Fibrous	No						55%	5%		40%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-5	A0303059-05	White	Fibrous	No						55%	5%		40%	

Comment: No Asbestos Detected.

Hygeia Project Number: A0303059
Client Project Number/Name: Job # 7759 / Fort Bragg Bldg 5630

Analyzed: 3/19/2003 **by** JC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-6	A0303059-06	Green	Gummy	Yes	5%								95%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-7	A0303059-07	White	Flaky	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-8	A0303059-08	Gray	Flaky	Yes							20%		80%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-9	A0303059-09	Gray	Caulky	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-10	A0303059-10	White	Fibrous	No						55%	5%		40%	

Comment: No Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-11	A0303059-11	White	Fibrous	No						55%	5%		40%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-12	A0303059-12	White	Layered	No						10%	10%		80%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-R-13	A0303059-13	Black	Gummy	No	5%								95%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-R-14	A0303059-14	Black	Fibrous	No	5%					40%			55%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-R-15	A0303059-15	Black	Fibrous	No						60%			40%	

Comment: No Asbestos Detected.

Hygeia Project Number: A0303059

Client Project Number/Name: Job # 7759 / Fort Bragg Bldg 5630

Analyzed: 3/19/2003 **by** JC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5630-1-16	A0303059-16	White	Cons.	No									100%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project: Fort Bragg Bldg 5630	Job No.: 7759
Sampler: Tim Jones	Analysis: PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
3/12/03	5630-1-1	45512	2" TSI
	5630-1-2	45513	Window Glazing
	5630-1-3	45514	MUD
	5630-1-4	45515	Ceiling Tile - New
	5630-1-5	45516	Ceiling Tile - Old
	5630-1-6	45517	stick-pin mastic
	5630-1-7	45518	MUD
	5630-1-8	45519	TSI Elbow
	5630-1-9	45520	Window Glazing
	5630-1-10	45521	Ceiling Tile - Old
	5630-1-11	45522	Ceiling Tile - New
	5630-1-12	45523	MUD
	5630-R-13	45524	Flashing
	5630-R-14	45525	Flashing Felts
	5630-R-15	45526	BUR
↓	5630-1-16	45527	Window Glazing

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	3-15-03	1400	Thalas Pattarayan	03-17-03	1305
Thalas Pattarayan	03-17-03	1030 ~~0900~~		3/18/03	

Comments: Fax results to Tim Jones @ 910-436-9483

Room 204

Appendix C

Certifications and Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

Georgia Institute of Technology

This is to certify that

Michael Stephen Ruth

has attended and satisfactorily passed an examination covering the contents of a Continuing Education Course entitled:

Inspecting Buildings for Asbestos Containing Materials (Initial Course for Building Inspectors)

meeting the Federal EPA AHERA Model Accreditation Plan requirements for Building Inspectors (TSCA Title II).

October 16-18, 2000
Dates of Attendance

October 18, 2000
Examination Date

October 18, 2001
Expiration Date

Georgia Tech Research Institute
Electro-Optics, Environment and Materials Laboratory
Atlanta, Georgia 30332
Phone: (404) 894-7430; FAX: (404) 894-1267

Robert D. Schmitter
Course Director

578-78-6898
Social Security Number

2897
Certificate Number

© GOES 440

LITHO IN U.S.A.

Medical University of South Carolina

College of Health Professions

Program in Environmental Health Sciences

19 Hagood Avenue, Charleston, South Carolina 29425 (843) 792-5315

Certifies that

MICHAEL RUTH

Attended and Satisfactorily Completed

Asbestos Inspector Refresher

conducted October 31, 2002 through October 31, 2002
and passed an exam on October 31, 2002.

AbInsp-r27120-17203	4	578-78-6898	T.A. Rowland, III
Certificate Number	*Contact Hours*	*ID Number*	*Program Director*
October 31, 2002	October 30, 2003		T. A. Rowland III
Exam Date	*Certificate Expires*		*Instructor*

AUGET LARGIENDO
UNIV. MED. CAR. AUS. 1824

This certifies that the above recipient has completed the requisite training for Asbestos Certification under TSCA Title II.

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

HYGEIA LABORATORIES, INC.
MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004
Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Hazardous Building Materials Survey

Building No. 5630 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Building No. 5630 Fort Bragg, North Carolina

by Timothy A. Jones

Final Report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building No. 5630 is a single story structural concrete frame structure. Original walls are constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of wood framing covered with gypsum drywall. The floor system is concrete slab on grade covered with at least two layers of vinyl tiles. The roof system is of built-up design; it is constructed from the top down with stone ballast over multi-layered tar and felt membrane over foam-glass insulation over a tar layer on the concrete roof deck. The buildings primary use is as an office building.

Description of study

Investigation

This report documents the hazardous building materials survey of Building No. 5630 at Ft. Bragg, North Carolina conducted on 12 March 2003 by USACE Savannah District employees Tim Jones and Mike Ruth and includes only building materials located at the time of inspection. This survey was conducted in general accordance with the Statement of Services for Hazardous Building Material Inspections developed by Ray Willingham, retired, USACE Savannah District. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in chemical type fire suppression systems; smoke detectors; and lead building materials excluding lead based paint. Other hazardous building materials not listed above may also be included at the discretion of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 5630 is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Lead Building Materials:* Inspection of the building revealed lead in the plumbing drainage and vent piping system used as pipe joints. Lead flashings are used at the pipe penetrations through the roof. Details are outlined in Table 2.

c. *Compressed Refrigerant Gas:* Seven window air-conditioning units were located in Building 5630. One drinking fountain was located in Building 5630. All of these units are assumed to contain refrigerant gas that should be recovered prior to demolition.

d. *Above and Underground Storage Tanks:* None of either were located associated with Building 5630.

List of Tables

List of Figures

Tables

TABLE 1
Ft. BRAGG BUILDING 5630
FLUORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Interior	24	4 bulb, 4 foot long fluorescent fixtures with two 8” X 2” ballasts each
Interior	2	2 bulb, 4 foot long fluorescent fixtures with one 8” X 2” ballast each

TABLE 2
Ft. BRAGG BUILDING 5630
LEAD BUILDING COMPONENTS

BUILDING COMPONENT	DESCRIPTION	LOCATION	ESTIMATED NUMBER
Hot poured lead pipe joint	In plumbing drainage, waste and vent piping	Under slab and in plumbing chase walls	50-100
Lead Pipe Flashings	Roof flashing	Roof	5

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Hazardous Building Materials Survey

Building No. 5725 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Building No. 5725 Fort Bragg, North Carolina

by Timothy A. Jones

Final Report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building 5725 is a combination of a single three-story barracks wing and an attached single-story section used as a kitchen and dining area area. The building is of structural concrete framework with original walls constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of a combination of wood framing covered with gypsum drywall. The floor systems are concrete slabs mostly covered with two layers of vinyl tiles. The roof systems are of built-up design; they are constructed from the top down with cement panel ballast attached to expandable polystyrene insulation over rubber roof membrane over expandable polystyrene insulation on the concrete roof deck.

Description of study

Investigation

This report documents the hazardous building materials survey of Building No. 5725 at Ft. Bragg, North Carolina conducted on 14 April 2003 by USACE Savannah District employees Tim Jones and Mike Ruth. This report includes only building materials located at the time of inspection. This survey was conducted in general accordance with the Statement of Services for Hazardous Building Material Inspections developed by Ray Willingham, retired, USACE Savannah District. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in chemical type fire suppression systems; smoke detectors; and lead building materials excluding lead based paint. Other hazardous building materials not listed above may also be included at the discression of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 5725 is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Lead Building Materials:* Inspection of the building revealed lead in the plumbing drainage and vent piping system used as pipe joints. Lead joints are used to secure the stairwell handrails to the concrete floors and stairs. Details are outlined in Table 2.

c. *Compressed Refrigerant Gas:* Two drinking fountains were located in Building 5725. Two window air conditioners were located in the barracks wing rooms. Three walk in refrigerators/freezers were located, one inside the kitchen area and two outside of the kitchen area. One refrigerator compressor system thought to be associated with the inside walk in refrigerator/freezer is located outside the kitchen area near the loading dock. One small older refrigerator/freezer type compressor was located in a small closet-like room in the Mechanical Room B101. Several icemakers and food-cooling systems are located within the kitchen and dining areas. These units are assumed to contain refrigerant gas that should be recovered prior to demolition if the units are not to be relocated.

d. *Mercury Thermostats and Switches:* Eighty-eight mercury-containing thermostats or were located in Building 5725. One is located in each barracks sleeping room and one in each office room in the barracks wing. Each thermostat contains two mercury bulbs.

e. *Smoke Detectors:* Five smoke detectors were located in Building 5725. Two were located on each the second and third floors and one on the first floor of the barracks wing.

f. *Battery Backup Alarm Systems:* One alarm system containing Lithium batteries for electrical power backup are located in Building 5725 at the arms room.

g. *Fire Suppression Systems:* Four built in fire suppression systems for the kitchen exhaust hoods were located in the kitchen and serving line areas. The systems contain Ansul R101 brand of suppressant in compressed cylinders.

h. *Fire Alarm Systems:* Two fire alarm panels were located that may contain battery backup systems and electronic circuit boards, one in the kitchen area and one on the first floor of the barracks wing.

i. *Transformers:* One large pad mounted transformer was located outside of the kitchen area near the loading dock. This transformer is or has been leaking oil as evidenced by staining on the concrete pad and surrounding soil.

j. *Grease Traps:* One in ground grease trap was located outside the kitchen by the loading dock. Two above ground grease traps were located inside the kitchen area near the tray wash and dishwasher.

List of Tables

Tables

TABLE 1
Ft. BRAGG BUILDING 5725
FLUORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Barracks wing corridors	57	2 bulb, 2 foot square fluorescent fixtures with one 2” X 6” ballast each
Barracks wing NCO room restrooms	13	2 bulb, 2 foot long fluorescent fixtures with single ballast each
Barracks wing & Kitchen/Dining Area	155	2 bulb, 4 foot long fluorescent fixture with one 8” X 2” ballast
Barracks wing & Kitchen/Dining Area	80	4 bulb, 4 foot long fluorescent fixtures with two 8” X 2” ballasts each
Barracks wing large restrooms	50	1 bulb, 4 foot long fluorescent fixture with one 8” X 2” ballast
Barracks wing & Kitchen/Dining Area	4	Battery backup exit lights
Barracks wing & Kitchen/Dining Area	12	Battery backup emergency lights
Barracks wing & Kitchen/Dining Area	12	Battery backup combination emergency/exit lights
Exterior	4	1 foot square possible mercury lights

TABLE 2
Ft. BRAGG BUILDING 5725
LEAD BUILDING COMPONENTS

BUILDING COMPONENT	DESCRIPTION	LOCATION	ESTIMATED NUMBER
Hot poured lead pipe joint	In plumbing drainage, waste and vent piping and storm drains	Underground. In crawlspace and exterior at downspouts	150-200
Lead stair rail mounts	Hot poured lead joints	At concrete where stair rail mounts to stairs and landings	90-100

TABLE 3
Ft. BRAGG BUILDING 5725
MISCELLANEOUS HAZARDOUS BUILDING MATERIALS

AREA IDENTIFICATION	NUMBER PRESENT	DESCRIPTION OF MATERIAL
Barracks wing corridors & Admin area	2	Refrigerated drinking fountains containing refrigerant gas
Barracks Wing rooms	2	Window air conditioners containing refrigerant gas
Kitchen area	3	Walk in refrigerators/freezers containing refrigerant gas
Kitchen & Dining areas	Several	Ice makers and food coolers containing refrigerant gas
Kitchen & Serving areas	4	Fire suppression systems, Ansul R101
Barracks wing & Kitchen	2	Fire alarm panels
Exterior, near kitchen	1	Pad mounted transformer
Exterior & kitchen	3	Grease traps
Barracks wing rooms	88	Mercury-containing thermostats with two mercury bulbs each
Barracks wing corridors	5	Smoke detectors
Basement area arms room	1	Battery backup alarm systems

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 5826 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **March 2003**

Building No. 5826 Fort Bragg, North Carolina

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 5826 at Ft. Bragg; North Carolina conducted on 25 March 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Ruth. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 5826 is a single story concrete block structure. Original walls are constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of wood framing covered with gypsum drywall. The floor system is concrete slab on grade covered with vinyl tiles. The roof system is of rubber membrane over insulation design; it is constructed from the top down with 2' X 4' cement & foam ballast panels over rubber membrane over several inches of expandable polystyrene insulation over brown fibrous insulation on a steel roof deck. Roof framing consists of steel bar joists. The building is divided into three equal sized units, each being occupied by a separate battalion. The buildings primary use is as a storage facility and office space. Rooms on the building floor plans are arbitrarily numbered for identification in this report only.

Description of study

Investigation

All accessible areas of Building No. 5826 were visually inspected for suspected asbestos containing materials (ACM) by accredited inspectors. The unit occupied by the 2nd Battalion, on the end of the building nearest the mechanical room, was inaccessible at the time of this inspection. Bulk samples of all suspect ACM's were collected. This report details ACM as identified at the time of inspection only. Whether other asbestos

inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspectors. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 5826 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

a. *HVAC Piping Insulation:* The TSI on the HVAC systems is a combination of asbestos and non-asbestos containing materials. The HVAC hot water piping within the office and storage areas supplying water to the radiant heaters is covered with fiberglass non-asbestos pipe run material. The fittings on this piping system are covered with a hard molded friable material that contains asbestos. Within the mechanical room, Room 1, the majority of the pipe runs are covered with fiberglass non-asbestos containing material with the exception of the 6" condensate line and the 4" steam line in the pipe pit that is covered with a

hard insulation material that contains asbestos. The majority of fittings on the HVAC piping systems within the mechanical room are covered with hard molded friable material that contains asbestos. The short section of steam piping on the exterior of the mechanical room running from the wall into the ground is covered with a hard friable material containing asbestos. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *Domestic Water Piping:* The domestic water piping within the office and storage areas is covered with fiberglass insulation. The jacket on this insulation is coated with dark colored mastic that contains asbestos. Within the mechanical room some of the domestic water piping is covered with a similar material. Any hard fittings encountered on this piping system are assumed to contain asbestos. All insulation on this system concealed within plumbing chases is assumed to contain asbestos. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 5826 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All vinyl floor tiles and associated mastic in the office areas and small sections of the storage areas are assumed to contain asbestos. - (Refer to Tables 2 and 3 for specific information, and Figure 2 for homogeneous area locations).

b. *Window Glazing Compound:* Window glazing compound on the interior of the windows contains asbestos. This material is normally installed in 1” wide strips along all sides of the glass windowpanes. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations).

c. *Mastics:* The adhesive mastic used to attach the metal stickpins to the underside of the steel roof deck over the office areas contains asbestos. These stickpins are used to mount the fiberglass batting insulation to the roof deck and are approximately 2” square. They are located approximately 1 foot apart on the

underside of the roof deck. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

No asbestos containing surfacing material was located in Building 5826.

Conclusions

The following materials found at Building No. 5826 contain positive amounts of asbestos:

a. *TSI:* Hard molded fittings throughout Building 5826 contain or are assumed to contain asbestos. Hard friable insulation on the steam and condensate piping in the mechanical room and on the exterior of Building 5826 contains asbestos. Dark colored mastic on the domestic water piping contains asbestos. All TSI materials that may exist within the plumbing chases are assumed to contain asbestos.

b. *Floor Tile & Mastic:* All floor tiles and associated mastic are assumed to contain asbestos.

c. *Mastics:* The adhesive mastic used to attach the metal stickpins to the underside of the steel roof deck over the office areas contains asbestos.

d. *Window Glazing Compound:* Window glazing compound on the interior of the windows contains asbestos.

List of Tables

List of Figures

Appendices

TABLE 1
SUSPECT ACM SAMPLES
Ft. BRAGG, BUILDING 5826

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
5826-MZ-1	**TSI 4" pipe elbow**	**Mezzanine above Room 30, HVAC piping**	**3% Chrysotile, 5% Amosite**
5826-MZ-2	TSI 4" pipe run	Mezzanine above Room 30, HVAC piping	None
5826-MZ-3	Drywall joint compound	Mezzanine above Room 30, partition wall	None
5826-MZ-4	**Window glazing compound**	**Room 30, interior of windows**	**2% Chrysotile**
5826-1-5	Gypsum wall board	Room 30 wall, stairwell to mezzanine	None
5826-1-6	**Stickpin mastic**	**Room 27, at ceiling deck**	**2% Chrysotile**
5826-1-7	**TSI black mastic**	**Room 26, applied to exterior of fiberglass pipe run and firings, domestic water piping**	**10% Chrysotile**
5826-1-8	Ceiling plaster	Room 26	None
5826-1-9	**TSI black mastic**	**Room 34, applied to exterior of fiberglass pipe run and firings, domestic water piping**	**10% Chrysotile**
5826-1-10	2' X 4' ceiling tile	Room 34	None
5826-1-11	Door kick plate	Room 27, door to Room 26	None
5826-1-12	Caulking material	Room 30, exterior door frame caulk, between door frame and CMU	None
5826-E-13	Caulking material	Exterior, expansion joint in CMU	None
5826-E-14	Caulking material	Exterior, door frame caulk, between door frame and CMU	None
5826-M-15	**TSI 6" pipe run**	**Room 1, condensate piping**	**5% Chrysotile, 30% Amosite**
5826-M-16	**TSI cloth jacket & black mastic**	**Room 1, domestic cold water piping**	**15% Chrysotile**
5826-M-17	**TSI 5" pipe elbow**	**Room 1, HVAC piping**	**3% Amosite**
5826-M-18	**TSI pipe valve**	**Room 1, HVAC piping**	**<1% Chrysotile, 3% Amosite**
5826-E-19	**TSI 4" pipe run**	**Exterior, steam piping**	**5% Chrysotile, 35% Amosite**
5826-R-20	White roof sealer	Lower roof	None
5826-R-21	Brown fibrous roof insulation	Lower roof, under sample R-20	None

5826-R-22	Caulking material	Lower roof, at top of metal flashing to wall	None
5826-R-23	Roof tar	Upper roof, layer on brown fibrous roof insulation, under roof membrane	None
5826-R-24	Brown fibrous roof insulation	Upper roof, under roof membrane	None
5826-R-25	Roof tar, QC duplicate of sample R-23	Upper roof, layer on brown fibrous roof insulation, under roof membrane	None
5826-1-26	**TSI pipe elbow**	**Room 20, HVAC piping**	**<1% Chrysotile, 3% Amosite**
5826-1-27	Drywall joint compound	Room 20, corner of wall	None
5826-1-28	**Window glazing compound**	**Room 28, interior of windows**	**2% Chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
Ft. BRAGG, BUILDING 5826

Material Description	UNITS	Area Descriptions								
		APPLICABLE SAMPLE NUMBERS	EXTERIOR	OFFICE AREAS	STORAGE AREAS	MECHANICAL ROOM	INTERIOR			TOTALS
Floor Tile & Mastic	S.F.	Assumed Asbestos		2150	1150					3300
TSI 3” Pipe Run Insulation With Black Mastic	L.F.	Assumed Asbestos		200		30				230
TSI 3” Fittings With Black Mastic	Ea.	Assumed Asbestos		20		5				25
TSI 3” Fittings, Hard Gray/White Molded	Ea.					15				15
TSI 4” Pipe Run Insulation With Black Mastic	L.F.	1-7 1-9 M-16		400		60				460

TSI 4” Pipe Fittings With Black Mastic	Ea.	Assumed Asbestos		40		10				50
TSI 4” Pipe Run Insulation Hard Gray/White	L.F.	E-19				15				15
TSI 4” Pipe Fittings, Hard Gray/White Molded	Ea.	MZ-1 1-26				210				240
TSI 6” Pipe Run Insulation Hard Gray/White	L.F.	M-15 M-18				20				20
TSI 6” Pipe Fittings Hard Gray/White Molded	Ea.	Assumed Asbestos				15				15
TSI 12” Oval Pipe Fitting Hard Gray/White Molded	S.F.	Assumed Asbestos				5				5
Window Glazing Compound	L.F. 1” wide	MZ-4 1-28					600			600
Stickpin Mastic	S.F.	1-6		65						65

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot, Ea. = Each

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
Ft. BRAGG, BUILDING 5826

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
TSI	Pipe run insulation, hard white friable type	Yes, 35-40%	35 L.F.	Friable	Good-Significantly damaged	High
TSI	Pipe Run Insulation With Black Mastic	Yes 10-15%	690 L.F.	Mastic is non-friable	Good	Low
TSI	Pipe fittings With Black Mastic	Assumed	75 Ea.	Mastic is non-friable	Good	Low
TSI	Pipe Fittings Hard Gray/White Molded	Yes 3-8%	271 Ea.	Friable	Good-Significantly damaged	High
Miscellaneous	Floor tile & mastic	Assumed	3300 S.F.	Non-friable	Good	Low
Miscellaneous	Stickpin mastic	Assumed	65 S.F.	Friable	Good	Low

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot, Ea. = Each

Figure 1

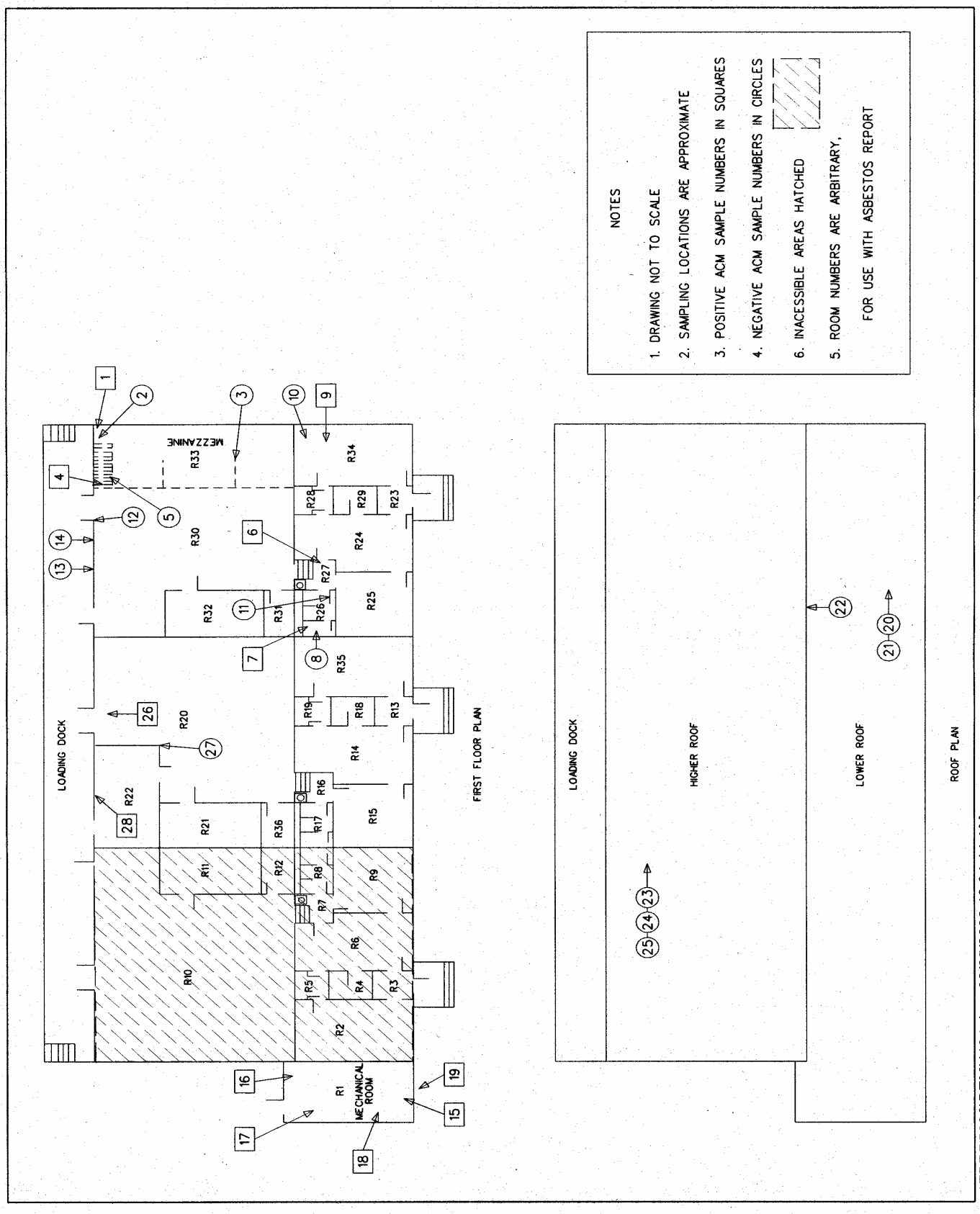
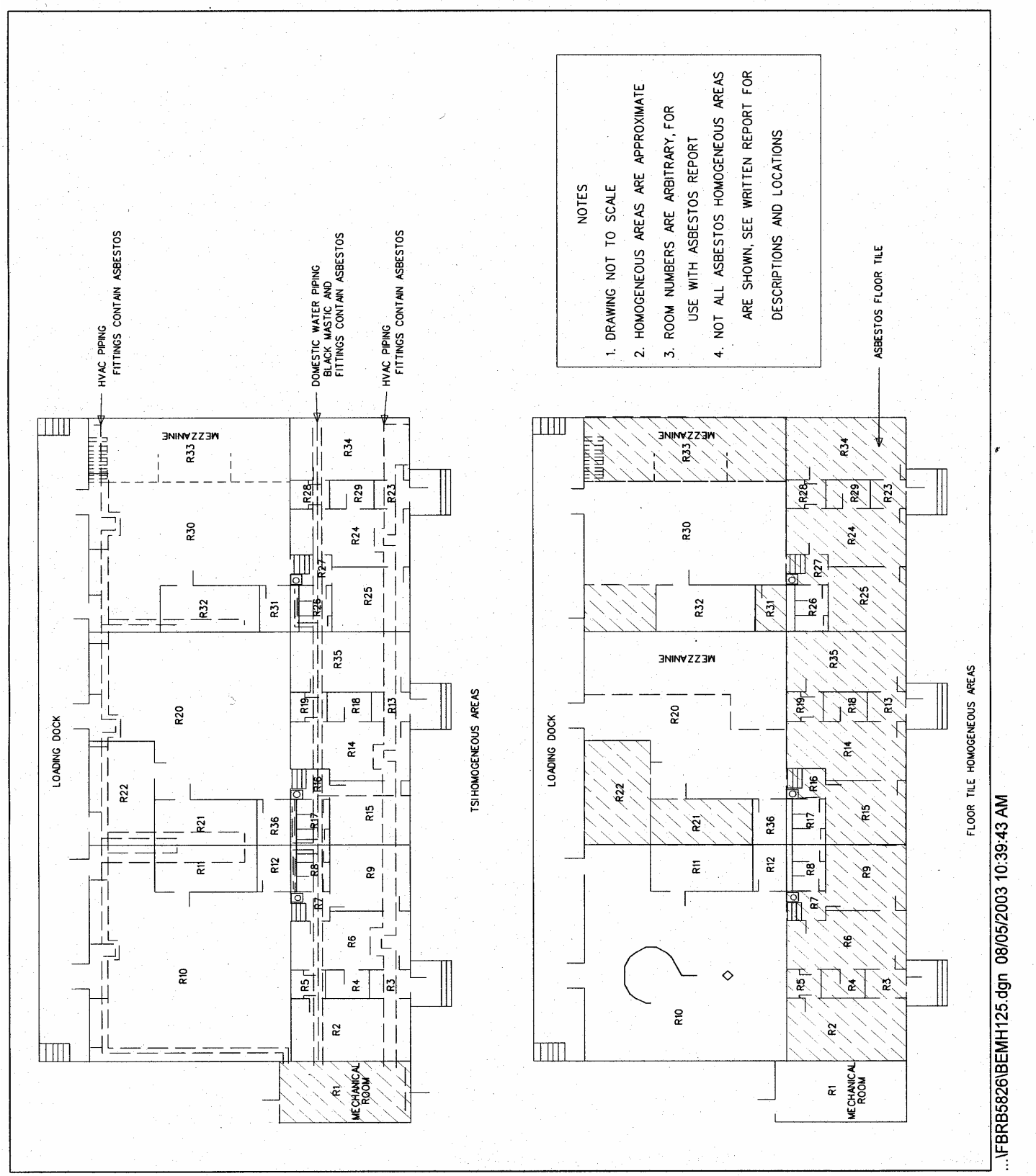

NOTES
1. DRAWING NOT TO SCALE
2. SAMPLING LOCATIONS ARE APPROXIMATE
3. POSITIVE ACM SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ACM SAMPLE NUMBERS IN CIRCLES
6. INACCESSIBLE AREAS HATCHED
5. ROOM NUMBERS ARE ARBITRARY,
FOR USE WITH ASBESTOS REPORT
MEZZANINE
LOADING DOCK
R1 MECHANICAL ROOM
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
R32
R33
R34
R35
R36
FIRST FLOOR PLAN
LOADING DOCK
HIGHER ROOF
LOWER ROOF
ROOF PLAN
...\FBRB5826\BEMH124.dgn 08/05/2003 10:34:14 AM

Figure 2


NOTES
1. DRAWING NOT TO SCALE
2. HOMOGENEOUS AREAS ARE APPROXIMATE
3. ROOM NUMBERS ARE ARBITRARY, FOR USE WITH ASBESTOS REPORT
4. NOT ALL ASBESTOS HOMOGENEOUS AREAS ARE SHOWN, SEE WRITTEN REPORT FOR DESCRIPTIONS AND LOCATIONS
HVAC PIPING FITTINGS CONTAIN ASBESTOS
DOMESTIC WATER PIPING BLACK MASTIC AND FITTINGS CONTAIN ASBESTOS
HVAC PIPING FITTINGS CONTAIN ASBESTOS
ASBESTOS FLOOR TILE
MEZZANINE
LOADING DOCK
MECHANICAL ROOM
TSI HOMOGENEOUS AREAS
FLOOR TILE HOMOGENEOUS AREAS
...\FBRB5826\BEMH125.dgn 08/05/2003 10:39:43 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

4/17/2003

Subject:
Hygeia Project Number: A0304041
Client Project Number/Name: 7770 /FT. BRAGG BLDG 5826

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 4/7/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP# 102087-0
Texas Dept. of Health # 30-0232
Commonwealth of Virginia # 3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0304041

Client Project Number/Name: 7770 / FT. BRAGG BLDG 5826

Analyzed: 4/8/2003 by CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-MZ-1	A0304041-01	Gray	Powdery	Yes	3%	5%				12%	5%		75%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-MZ-2	A0304041-02	Yellow	Fibrous	Yes						<1%	95%		5%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-MZ-3	A0304041-03	Gray	Powdery	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-MZ-4	A0304041-04	Gray	Cons.	Yes	2%								98%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-5	A0304041-05	Gray	Cons.	Yes						20%			80%	

Comment: No Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-6	A0304041-06	Brown	Cons.	Yes	2%								98%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-7	A0304041-07	Black	Gummy	Yes	10%						5%		85%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-8	A0304041-08	Tan	Plastery	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-9	A0304041-09	Black	Gummy	Yes	10%						5%		85%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-10	A0304041-10	Gray	Fibrous	Yes						30%	10%		40%	20%

Comment: No Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-11	A0304041-11	Black	Cons.	Yes						20%			80%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-12	A0304041-12	Gray	Gummy	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-E-13	A0304041-13	Gray	Gummy	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-E-14	A0304041-14	Gray	Gummy	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-M-15	A0304041-15	Gray	Fibrous	Yes	5%	30%							65%	

Comment: Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-M-16	A0304041-16	Black	Gummy	Yes	15%						5%		80%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-M-17	A0304041-17	Brown	Powdery	Yes		3%							97%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-M-18	A0304041-18	Gray	Fibrous	Yes	<1%	3%							97%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-E-19	A0304041-19	Gray	Fibrous	Yes	5%	35%							60%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-R-20	A0304041-20	Black	Rubbery	Yes									100%	

Comment: No Asbestos Detected.

Hygeia Project Number: A0304041
Client Project Number/Name: 7770 / FT. BRAGG BLDG 5826

Analyzed: 4/8/2003 by CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-R-21	A0304041-21	Brown	Fibrous	Yes						40%			50%	10%

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-R-22	A0304041-22	Gray	Rubbery	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-R-23	A0304041-23	Black	Gummy	Yes	<1%					10%			90%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-R-24	A0304041-24	Gray	Fibrous	Yes						60%			30%	10%

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-R-25	A0304041-25	Black	Gummy	Yes						10%			90%	

Comment: No Asbestos Detected.

Hygeia Project Number: A0304041
Client Project Number/Name: 7770 / FT. BRAGG BLDG 5826

Analyzed: 4/8/2003 by CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-26	A0304041-26	Gray	Powdery	Yes	<1%	3%					5%		92%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-27	A0304041-27	Gray	Powdery	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
5826-1-28	A0304041-28	Gray	Cons.	Yes	2%								98%	

Comment: **Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project: Ft. Bragg Bldg 5826	Job No.: 7770
Sampler: Tim Jones	Analysis: PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
3-25-03	5826-MZ-1	45869	TSI Pipe Elbows
	-MZ-2	70	TSI Pipe Run
	-MZ-3	71	Drywall Joint Compound
	-MZ-4	72	Window Glazing Comp
	-1-5	73	Gypsum Wall Board
	-1-6	74	Mastic
	-1-7	75	TSI Mastic
	-1-8	76	Plaster
	-1-9	77	TSI Mastic
	-1-10	78	Ceiling Tile
	-1-11	79	Door Kick Plate
	-1-12	80	Caulking Material
	-E-13	81	" "
	-E-14	82	" "
	-M-15	83	TSI Pipe Run
	-M-16	84	TSI Cloth + Mastic
	-M-17	85	TSI Pipe Elbow
	-M-18	86	TSI Pipe Valve
	-E-19	87	TSI Pipe Run
	-R-20	88	Roof Sealer
	-R-21	89	Roof Insulation
↓	-R-22	90	Caulking Material

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	3-31-03	1615	C. Call	3/31/03	

Comments: Fax results to Tim Jones @

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project: Ft. Bragg Bldg. 5826	Job No.: 7770
Sampler: Tim Jones	Analysis: PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
3-25-03	5826-R-23	45891	Roof Tar
"	-R-24	92	Roof Insulation
"	-R-25	93	" "
"	-1-26	94	TSI Pipe Elbow
"	-1-27	95	Drywall Joint Compound
↓	-1-28	96	Window Glazing Compound

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	3-31-03	1615	P. Cell	3/31/03	

Comments: Fax results to Tim Jones @

Appendix C

Certifications and Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

Georgia Institute of Technology

This is to certify that

Michael Stephen Ruth

has attended and satisfactorily passed an examination covering the contents of a Continuing Education Course entitled:

Inspecting Buildings for Asbestos Containing Materials (Initial Course for Building Inspectors)

meeting the Federal EPA AHERA Model Accreditation Plan requirements for Building Inspectors (TSCA Title II).

October 16-18, 2000
Dates of Attendance

October 18, 2000
Examination Date

October 18, 2001
Expiration Date

Georgia Tech Research Institute
Electro-Optics, Environment and Materials Laboratory
Atlanta, Georgia 30332
Phone: (404) 894-7430; FAX: (404) 894-1267

578-78-6898
Social Security Number

Robert D. Schmitter
Course Director

2897
Certificate Number

© GOES 440

LITHO IN U.S.A.

Medical University of South Carolina

College of Health Professions

Program in Environmental Health Sciences

19 Hagood Avenue, Charleston, South Carolina 29425 (843) 792-5315

Certifies that

MICHAEL RUTH

Attended and Satisfactorily Completed

Asbestos Inspector Refresher

conducted October 31, 2002 through October 31, 2002
and passed an exam on October 31, 2002.

AbInsp-r27120-17203	4	578-78-6898	T.A. Rowland, III
Certificate Number	Contact Hours	ID Number	Program Director
October 31, 2002	October 30, 2003		T. A. Rowland III
Exam Date	Certificate Expires		Instructor

AUGET LARGIENDO
UNIV. MED. CAR. AUS. 1824

This certifies that the above recipient has completed the requisite training for Asbestos Certification under TSCA Title II.

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Hazardous Building Materials Survey

Building No. 5826 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Building No. 5826 Fort Bragg, North Carolina

by Timothy A. Jones

Final Report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building No. 5826 is a single story concrete block structure. Original walls are constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of wood framing covered with gypsum drywall. The floor system is concrete slab on grade covered with vinyl tiles. The roof system is of rubber membrane over insulation design; it is constructed from the top down with 2' X 4' cement & foam ballast panels over rubber membrane over several inches of expandable polystyrene insulation over brown fibrous insulation on a steel roof deck. Roof framing consists of steel bar joists. The building is divided into three equal sized units, each being occupied by a separate battalion. The buildings primary use is as a storage facility and office space.

Description of study

Investigation

This report documents the hazardous building materials survey of Building No. 5826 at Ft. Bragg, North Carolina conducted on 25 March 2003 by USACE Savannah District employee Tim Jones and includes only building materials located at the time of inspection. This survey was conducted in general accordance with the Statement of Services for Hazardous Building Material Inspections developed by Ray Willingham, retired, USACE Savannah District. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in chemical type fire suppression systems; smoke detectors; and lead building materials excluding lead based paint. Other hazardous building materials not listed above may also be included at the discression of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 5826 is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Lead Building Materials:* Inspection of the building revealed lead in the cast iron plumbing drainage and vent piping system used as pipe joints. Poured lead joints are used to connect the stair handrails to the concrete at the interior and exterior stairs. Details are outlined in Table 2.

c. *Compressed Refrigerant Gas:* Three drinking fountains were located in Building 5826. Seven window air conditioners and one central air conditioner were located in Building 5826. These units are assumed to contain refrigerant gas that should be recovered prior to demolition.

d. *Above and Underground Storage Tanks:* None of either were located near Building 5826.

List of Tables

Tables

TABLE 1
Ft. BRAGG BUILDING 5826
FLUORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Interior	38	2 bulb, 4 foot long fluorescent fixtures with one 8” X 2” ballasts each
Interior	28	4 bulb, 4 foot long fluorescent fixtures with two 8” X 2” ballasts each

TABLE 2
Ft. BRAGG BUILDING 5826
LEAD BUILDING COMPONENTS

BUILDING COMPONENT	DESCRIPTION	LOCATION	ESTIMATED NUMBER
Hot poured lead pipe joint	In plumbing drainage, waste and vent piping	Under slab and in plumbing chase walls	50-100
Hot poured lead joint	Stair rail mount	At junction with concrete at stairs	40

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6032 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **March 2003**

Building No. 6032 Fort Bragg, North Carolina

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6032 at Ft. Bragg; North Carolina conducted on 11 March 2003 by Savannah District US Army Corps of Engineers employees Tim Jones, and Mike Ruth. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6032 is a single story structural concrete frame structure. Original walls are constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of wood framing covered with gypsum drywall. The floor system is concrete slab on grade covered with at least two layers of vinyl tiles. The roof system is of built-up design; it is constructed from the top down with stone ballast over multi-layered tar and felt membrane over foam-glass insulation over a tar layer on the concrete roof deck. The buildings primary use is as an office building. Rooms on the building floor plans are arbitrarily numbered for identification in this report only.

Description of study

Investigation

All accessible areas of Building No. 6032 were visually inspected for suspected asbestos containing materials (ACM) by accredited inspectors. Bulk samples of all suspect ACM's were collected. This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspectors. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6032 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

a. *TSI Pipe Runs and Fittings, Domestic Water:* The insulation on the domestic water piping in the mechanical room and throughout the building is insulated with a hard cloth wrapped fibrous material that contains asbestos. The fittings on the domestic water piping are made of a field installed and molded highly friable material which is assumed to contain asbestos. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations and homogeneous area locations).

b. *TSI Pipe Runs and Fittings, HVAC:* HVAC heating piping within the mechanical room is covered with a cloth wrapped insulation material that contains asbestos. The fittings are similar to those on the domestic water lines and are made of a field installed molded highly friable material that contains asbestos. - (Refer to

Tables 1, 2 and 3 for specific information and Figure 1 for sample locations and homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6032 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* Vinyl floor tiles and associated mastic in the entire building are assumed to contain asbestos. The restroom is ceramic tile and the mechanical room has a bare concrete floor. There are two layers of floor tiles in the majority of the building. - (Refer to Tables 2 and 3 for specific information).

b. *Roofing Materials:* The roof of building 6032 is constructed of a multi-layered tar and felt membrane over foam-glass insulation. The tar and felt flashing materials and cements at the roof penetrations contain or are assumed to contain asbestos. The main roof field was analyzed and found to be non-asbestos containing. A tar layer applied to the concrete roof deck, under the insulation, was sampled and analyzed and found to be non-asbestos containing. The flashing area around the perimeter of the roof, from the edge in to approximately 3 feet, is assumed to contain asbestos based on inspections of similar buildings. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations and homogeneous area locations).

c. *Mastics:* The adhesive mastic used to attach the metal stickpins to the underside of the concrete roof deck is assumed to contain asbestos. These stickpins are used to mount the fiberglass insulation batting to the roof deck. They are approximately 2” square and located approximately 1 foot apart. - (Refer to Tables 2 and 3 for specific information).

d. *Caulking Compound*: Caulking compound around the exterior of the window frames where they join the block walls contains asbestos. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

No asbestos containing surfacing material was located in Building 6032.

Conclusions

The following materials found at Building No. 6032 contain positive amounts of asbestos:

a. *Floor Tile & Mastic:* All floor tiles and or mastic are assumed to contain asbestos.

b. *Roofing Materials:* All roof flashing materials above the insulation contains or is assumed to contain asbestos.

c. *TSI Pipe Runs and Fittings:* TSI pipe runs and fittings on the domestic water throughout the building and HVAC heating piping within the mechanical room contain or are assumed to contain asbestos.

d. *Mastics:* The adhesive mastic used to attach the metal stickpins to the underside of the concrete roof deck is assumed to contain asbestos.

e. *Caulking Compound*: Caulking compound around the window frames where they join the block walls contains asbestos.

List of Tables

List of Figures

Appendices

TABLE 1
SUSPECT ACM SAMPLES
Ft. BRAGG, BUILDING 6032

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6032-1-1	Drywall joint compound/ texturing	Corridor 1 wall near entry door	None
6032-1-2	Ceiling tile	Corridor 1	None
6032-1-3	Ceiling tile	Room 3, above sentry desk	None
6032-1-4	**TSI – Pipe run**	**Janitor's closet, Room 12, domestic water**	**2% Chrysotile, White layer - 20% Chrysotile, Rest - None**
6032-1-5	TSI – Pipe elbow	Corridor 1, at drinking fountain	None
6032-1-6	**TSI – Pipe run**	**Room 1, domestic water, vertical run**	**2% Chrysotile, White layer - 20% Chrysotile, Rest - None**
6032-1-7	TSI – Pipe elbow	Room 1, domestic water	None
6032-1-8	TSI – Pipe tee	Room 3, domestic water	None
6032-1-9	**TSI – Pipe run**	Room 3, domestic water	**2% Chrysotile, White layer - 20% Chrysotile, Rest - None**
6032-1-10	Drywall joint compound/ texturing	Room 5 wall	None
6032-1-11	Window glazing compound	Room 5 window	None
6032-1-12	Ceiling tile	Room 6	None
6032-1-13	Window glazing compound	Room 7 window	<1% Chrysotile
6032-1-14	Drywall joint compound/ texturing	Corridor 3	None
6032-M-15	**TSI – Pipe run**	**Mechanical room, Room 2, HVAC piping**	**40% Chrysotile**
6032-M-16	**TSI – Pipe elbow**	**Mechanical room, Room 2, HVAC piping**	**25% Chrysotile**
6032-M-17	**TSI – Pipe run**	**Mechanical room, Room 2, domestic water piping**	**2% Chrysotile, White layer - 20% Chrysotile, Rest - None**
6032-M-18	TSI – Pipe elbow	Mechanical room, Room 2, domestic water piping	None
6032-E-19	**Caulking compound**	**Exterior, between window and concrete block**	**2% Chrysotile**
6032-R-20	**Multi-layer flashing**	**Roof, at roof vent curb**	**4% Chrysotile, Felt layer - 25% Chrysotile, Rest - None**

6032-R-21	Built-up roof membrane	Roof, main roof field	None
6032-R-22	Roofing tar	Roof, main roof field, under sample R-21 and insulation, applied to concrete roof deck	None
6032-R-23	**Roofing cement**	**Roof, at roof vent curb**	**25% Chrysotile**
6032-R-24	**Roofing cement**	**Roof, at roof vent curb, QC duplicate of sample R-23**	**25% Chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
Ft. BRAGG, BUILDING 6032

Material Description	UNITS	Area Descriptions								
		APPLICABLE SAMPLE NUMBERS	EXTERIOR	INTERIOR	MECHANICAL ROOM	ROOF				TOTALS
Floor Tile & Mastic	S.F.	Assumed Asbestos		2150						2150
Roof Flashing Materials	S.F.	R-20 R-23 R-24				800				800
TSI 3” OD Pipe Run	L.F.	1-4 1-6 1-9 M-17		60	30					90
TSI 3” OD Pipe Fittings	Ea.	Assumed Asbestos		15	25					40
TSI 4” OD Pipe Run	L.F.	M-15		25	45					70
TSI 4” OD Pipe Fittings	Ea.	M-16		7	13					20
Stickpin Mastic	S.F.	Assumed Asbestos		65						65

Caulking Compound	L.F.	E-19	600							600

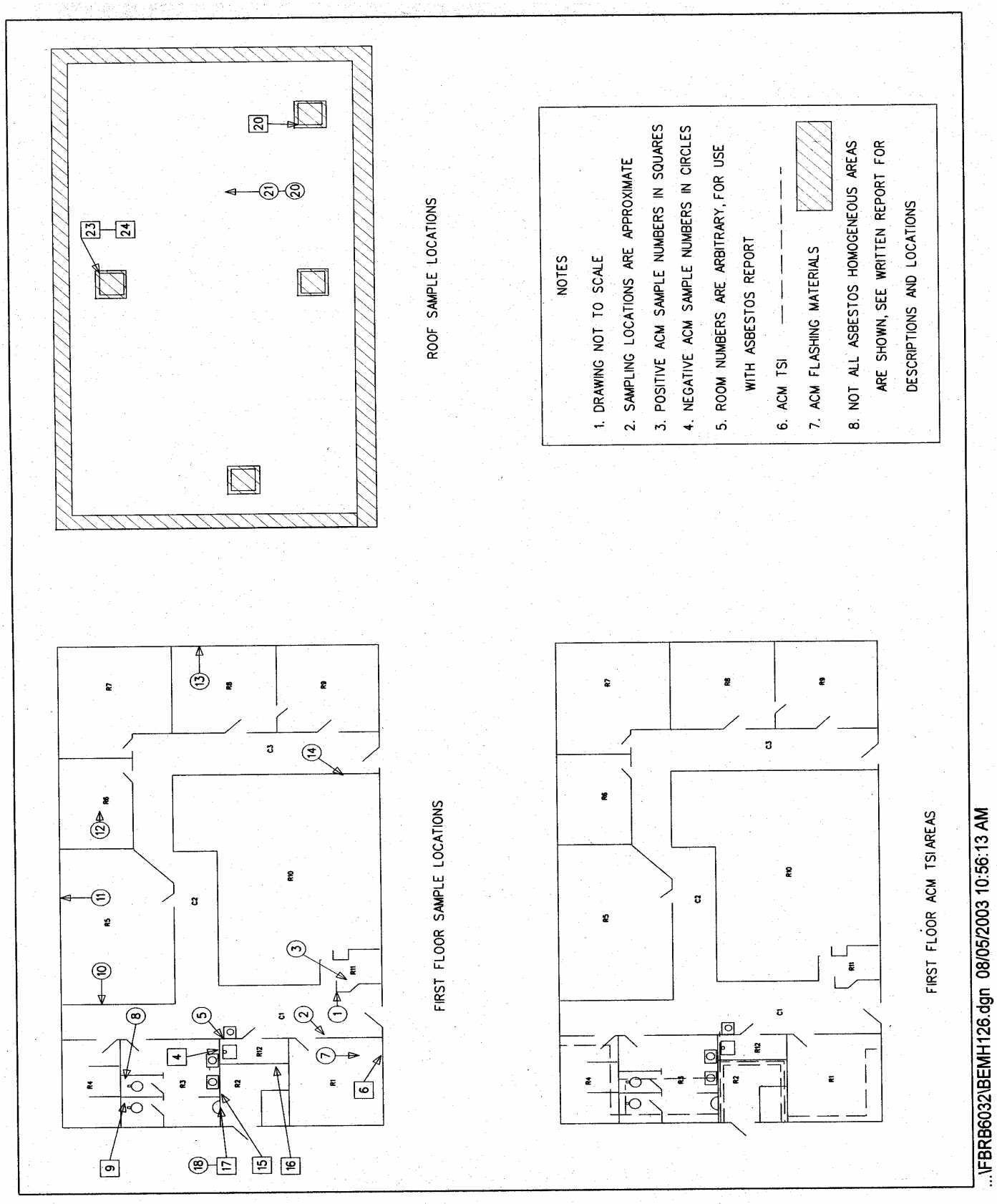
S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot, Ea. = Each

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
Ft. BRAGG, BUILDING 6032

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
TSI	TSI Pipe Run	Yes 2-40%	160 L.F.	Friable	Good-Significantly Damaged	High
TSI	TSI Pipe Fittings	Yes 0-25%	60 Ea.	Friable	Good-Significantly Damaged	High
Miscellaneous	Floor Tile & Mastic	Assumed	2150 S.F.	Non-friable	Good	Low
Miscellaneous	Roof Flashing Materials	Yes 4-25%	800 S.F.	Non-friable	Good	Low
Miscellaneous	Stickpin Mastic	Assumed	65 S.F.	Unknown	Unknown	Low
Miscellaneous	Caulking Compound	Yes 2%	600 L.F.	Non-friable	Good	Low

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot, Ea. = Each

Figure 1


ROOF SAMPLE LOCATIONS
FIRST FLOOR SAMPLE LOCATIONS
FIRST FLOOR ACM TSI AREAS
NOTES
1. DRAWING NOT TO SCALE
2. SAMPLING LOCATIONS ARE APPROXIMATE
3. POSITIVE ACM SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ACM SAMPLE NUMBERS IN CIRCLES
5. ROOM NUMBERS ARE ARBITRARY, FOR USE WITH ASBESTOS REPORT
6. ACM TSI
7. ACM FLASHING MATERIALS
8. NOT ALL ASBESTOS HOMOGENEOUS AREAS ARE SHOWN, SEE WRITTEN REPORT FOR DESCRIPTIONS AND LOCATIONS
...\FBRB6032\BEMH126.dgn 08/05/2003 10:56:13 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

4/11/2003

Subject:

Hygeia Project Number: A0303083
Client Project Number/Name: 7756 /Ft. Bragg Bldg 6032

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 3/18/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP# 102087-0
Texas Dept. of Health # 30-0232
Commonwealth of Virginia # 3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0303083

Client Project Number/Name: 7756 / Ft. Bragg Bldg 6032

Analyzed: 3/21/2003 by JC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-1	A0303083-01	White	Layered	No						10%			90%	

Comment: Joint Compound: NAD. Rest: NAD. No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-2	A0303083-02	White	Fibrous	No						60%			40%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-3	A0303083-03	White	Fibrous	No						60%			40%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-4	A0303083-04	White	Fibrous	No	2%					58%			40%	

Comment: White fibrous layer: 20% Chrysotile. Rest: NAD. Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-5	A0303083-05	Gray	Layered	No						15%	35%		50%	

Comment: No Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-6	A0303083-06	White	Layered	No	2%					53%			45%	

Comment: White Layer: 20% Chrysotile. Rest: NAD. Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-7	A0303083-07	Gray	Layered	No						15%	35%		50%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-8	A0303083-08	White	Powdery	No						5%	40%		55%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-9	A0303083-09	White	Layered	No	2%					53%			45%	

Comment: White Layer: 20% Chrysotile. Rest: NAD. Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-10	A0303083-10	White	Layered	No						10%			90%	

Comment: Joint Compound: NAD. Rest: NAD. No Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-11	A0303083-11	Gray	Cons.	No									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-12	A0303083-12	White	Fibrous	No						40%	5%		55%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-13	A0303083-13	Gray	Cons.	Yes	<1%								100%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-1-14	A0303083-14	White	Layered	No						10%			90%	

Comment: Joint Compound: NAD. Rest: NAD. No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-M-15	A0303083-15	Gray	Fibrous	No	40%					20%			40%	

Comment: Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-M-16	A0303083-16	Gray	Fibrous	No	25%					5%	10%		60%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-M-17	A0303083-17	Gray	Fibrous	No	2%					53%			45%	

Comment: White Layer: 20% Chrysotile. Rest: NAD. Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-M-18	A0303083-18	Gray	Fibrous	Yes							40%		60%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-E-19	A0303083-19	Gray	Cons.	Yes	2%								98%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-R-20	A0303083-20	Blue	Layered	No	4%					26%			70%	

Comment: Felt Layer: 25% Chrysotile. Rest: NAD. Asbestos Detected.

Hygeia Project Number: A0303083
Client Project Number/Name: 7756 / Ft. Bragg Bldg 6032

Analyzed: 3/21/2003 by JC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-R-21	A0303083-21	Black	Layered	No						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-R-22	A0303083-22	Black	Gummy	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-R-23	A0303083-23	Silver	Gummy	Yes	25%					5%			70%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6032-R-24	A0303083-24	Silver	Gummy	Yes	25%					5%			70%	

Comment: **Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

AD30383

Project: Ft. Bragg Bldg 6032	Job No.: 7755
Sampler: Tim Jones	Analysis: PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
3-11-03	6032-1-1	45426	Drywall Joint Compound / Texturing
	6032-1-2	45427	Ceiling Tile
	6032-1-3	45428	Ceiling Tile
	6032-1-4	45429	TSI Pipe Run
	6032-1-5	45430	TSI Pipe Elbow
	6032-1-6	45431	TSI Pipe Run
	6032-1-7	45432	TSI Pipe Elbow
	6032-1-8	45433	TSI Pipe Tee
	6032-1-9	45434	TSI Pipe Run
	6032-1-10	45435	Drywall Joint Compound / Texturing
	6032-1-11	45436	Window Glazing Compound
	6032-1-12	45437	Ceiling Tile
	6032-1-13	45438	Window Glazing Compound
	6032-1-14	45439	Drywall Joint Compound / Texturing
	6032-M-15	45440	TSI Pipe Run
	6032-M-16	45441	TSI Pipe Elbow
	6032-M-17	45442	TSI Pipe Run
	6032-M-18	45443	TSI Pipe Elbow
	6032-E-19	45444	Caulking Compound
	6032-R-20	45445	Multi-Layer Flashing
	6032-R-21	45446	Built-Up Roofing
↓	6032-R-22	45447	Roofing Tar

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	3-15-03	1500	Thalas Kattamajay	03-17-03	1300
Thalas Kattamajay	03-18-03	1030 ~~0900~~		3/14/03	

Comments: Fax results to Tim Jones @ 910-436-9483 Room # 204

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project: Ft. Bragg Bldg 6032	Job No.: 7756
Sampler: Tim Jones	Analysis: PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
3-11-03	6032-R-23	45448	Roofing Cement
↓	6032-R-24	45449	Roofing Cement

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	3-15-03	1500	Thalas Rattanaf	03-17-03	1300
Thalas Rattanaf	03-17-03	1030 ~~0900~~			

Comments: Fax results to Tim Jones @ 910-436-9483

Appendix C

Certifications and Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

Georgia Institute of Technology

This is to certify that

Michael Stephen Ruth

has attended and satisfactorily passed an examination covering the contents of a Continuing Education Course entitled:

Inspecting Buildings for Asbestos Containing Materials (Initial Course for Building Inspectors)

meeting the Federal EPA AHERA Model Accreditation Plan requirements for Building Inspectors (TSCA Title II).

October 16-18, 2000
Dates of Attendance

October 18, 2000
Examination Date

October 18, 2001
Expiration Date

Georgia Tech Research Institute
Electro-Optics, Environment and Materials Laboratory
Atlanta, Georgia 30332
Phone: (404) 894-7430; FAX: (404) 894-1267

578-78-6898
Social Security Number

Robert D. Schmitter
Course Director

2897
Certificate Number

© GOES 440

LITHO IN U.S.A.

Medical University of South Carolina

College of Health Professions

Program in Environmental Health Sciences

19 Hagood Avenue, Charleston, South Carolina 29425 (843) 792-5315

Certifies that

MICHAEL RUTH

Attended and Satisfactorily Completed

Asbestos Inspector Refresher

conducted October 31, 2002 through October 31, 2002
and passed an exam on October 31, 2002.

AbInsp-r27120-17203	4	578-78-6898	T.A. Rowland, III
Certificate Number	Contact Hours	ID Number	Program Director
October 31, 2002	October 30, 2003		T. A. Rowland III
Exam Date	Certificate Expires		Instructor

AUGET LARGIENDO
UNIV. MED. CAR. AUS. 1824

This certifies that the above recipient has completed the requisite training for Asbestos Certification under TSCA Title II.

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Hazardous Building Materials Survey

Building No. 6032 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Building No. 6032 Fort Bragg, North Carolina

by Timothy A. Jones

Final Report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building No. 6032 is a single story structural concrete frame structure. Original walls are constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of wood framing covered with gypsum drywall. The floor system is concrete slab on grade covered with at least two layers of vinyl tiles. The roof system is of built-up design; it is constructed from the top down with stone ballast over multi-layered tar and felt membrane over foam-glass insulation over a tar layer on the concrete roof deck. The buildings primary use is as an office building. Rooms on the building floor plans are arbitrarily numbered for identification in this report only.

Description of study

Investigation

This report documents the hazardous building materials survey of Building No. 6032 at Ft. Bragg, North Carolina conducted on 11 March 2003 by USACE Savannah District employees Tim Jones and Mike Ruth and includes only building materials located at the time of inspection. This survey was conducted in general accordance with the Statement of Services for Hazardous Building Material Inspections developed by Ray Willingham, retired, USACE Savannah District. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in chemical type fire suppression systems; smoke detectors; and lead building materials excluding lead based paint. Other hazardous building materials not listed above may also be included at the discretion of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 6032 is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Lead Building Materials:* Inspection of the building revealed lead in the plumbing drainage and vent piping system used as pipe joints. Lead flashings are used at the pipe penetrations through the roof. Details are outlined in Table 2.

c. *Compressed Refrigerant Gas:* Seven window air-conditioning units were located in Building 6032. One drinking fountain was located in Building 6032. All of these units are assumed to contain refrigerant gas that should be recovered prior to demolition.

d. *Above and Underground Storage Tanks:* None of either were located associated with Building 6032.

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Tables

TABLE 1
Ft. BRAGG BUILDING 6032
FLUORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Interior	25	4 bulb, 4 foot long fluorescent fixtures with two 8” X 2” ballasts each
Interior	1	2 bulb, 2 foot square fluorescent fixtures with 1 ballast each

TABLE 2
Ft. BRAGG BUILDING 6032
LEAD BUILDING COMPONENTS

BUILDING COMPONENT	DESCRIPTION	LOCATION	ESTIMATED NUMBER
Hot poured lead pipe joint	In plumbing drainage, waste and vent piping	Under slab and in plumbing chase walls	50-100
Lead Pipe Flashings	Roof flashing	Roof	5

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6132 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **March 2003**

Building No. 6132 Fort Bragg, North Carolina

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6132 at Ft. Bragg; North Carolina conducted on 11 March 2003 by Savannah District US Army Corps of Engineers employees Tim Jones, and Mike Ruth. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6132 is a single story structural concrete frame structure. Original walls are constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of wood framing covered with gypsum drywall. The floor system is concrete slab on grade covered with at least two layers of vinyl tiles. The roof system is of built-up design; it is constructed from the top down with stone ballast over multi-layered tar and felt membrane over foam-glass insulation over a tar layer on the concrete roof deck. The buildings primary use is as an office building. Rooms on the building floor plans are arbitrarily numbered for identification in this report only.

Description of study

Investigation

All accessible areas of Building No. 6132 were visually inspected for suspected asbestos containing materials (ACM) by accredited inspectors. Bulk samples of all suspect ACM's were collected. This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspectors. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6132 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

a. *TSI Pipe Runs and Fittings, Domestic Water:* The insulation on the domestic water piping in the mechanical room and throughout the building is a hard cloth wrapped fibrous material that contains asbestos. The fittings on the domestic water piping are made of a field installed and molded highly friable material which is assumed to contain asbestos. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations and homogeneous area locations).

b. *TSI Pipe Runs and Fittings, HVAC:* HVAC heating piping within the mechanical room is covered with a cloth wrapped white corrugated insulation material similar to Air Cell brand insulation that contains asbestos. The fittings are similar to those on the domestic water lines and are made of a field installed molded highly friable material assumed to contain asbestos. The HVAC heating piping

within the remainder of the building is not insulated. The pipe run and fitting insulation in the exterior steam pit contains or is assumed to contain asbestos. TSI debris was noted on the floor of the Mechanical Room and of the Exterior Pipe Pit and is assumed to contain asbestos. (Note: The underground HVAC piping is not estimated in this report). - (Refer to Tables1, 2 and 3 for specific information and Figure 1 for sample locations and homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6132 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* Vinyl floor tiles and associated mastic in the entire building with the exception of the mechanical room and restroom are assumed to contain asbestos. - (Refer to Tables 2 and 3 for specific information).

b. *Roofing Materials:* The roof of building 6132 is constructed of a multi-layered tar and felt membrane over foam-glass insulation. The tar and felt flashing materials and cements at the roof penetrations contain asbestos. The main roof field was analyzed and found to be non-asbestos containing. A tar layer applied to the concrete roof deck, under the insulation, was sampled and analyzed and found to be non-asbestos containing. The flashing area around the perimeter of the roof, from the edge in to approximately 3 feet, is assumed to contain asbestos based on inspections of similar buildings. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations and homogeneous area locations).

c. *Window Glazing Compound:* Window glazing compound on the interior side of the windows contains asbestos. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations).

d. *Caulking Compound:* Caulking compound on the exterior between the metal window frames and the concrete block walls contains asbestos. - (Refer to Tables 1, 2 and 3 for specific information and Figure 1 for sample locations).

e. *Mastics:* The adhesive mastic used to attach the metal stickpins to the underside of the concrete roof deck is assumed to contain asbestos. These stickpins are used to mount the fiberglass insulation batting to the roof deck. They are

approximately 2” square and located approximately 1 foot apart. - (Refer to Tables 2 and 3 for specific information).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

No asbestos containing surfacing material was located in Building 6132.

Conclusions

The following materials found at Building No. 6132 contain or are assumed to contain positive amounts of asbestos:

a. *Floor Tile & Mastic:* Floor tiles and or mastic are assumed to contain asbestos.

b. *Window Glazing Compound:* Window glazing compound on the interior side of the windows contains asbestos.

c. *R*oof *Flashing Materials:* Multi-layered flashing materials and flashing cement around the roof penetrations and roof edge contains or is assumed to contain asbestos.

d. *Caulking Compound:* Caulking compound between the metal window frames and the concrete block walls contains asbestos.

e. *Mastics:* The adhesive mastic used to attach the metal stickpins to the underside of the concrete roof deck is assumed to contain asbestos.

f. *TSI Pipe Runs and Fittings:* TSI pipe runs and fittings on the domestic water and HVAC heating piping within the building and in the exterior steam pits contain asbestos.

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Appendices

TABLE 1
SUSPECT ACM SAMPLES
Ft. BRAGG, BUILDING 6132

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6132-1-1	Drywall joint compound & textured surfacing	Corridor 3, corner of wall	None
6132-1-2	2’ X 2” ceiling tile	Corridor 3	None
6132-1-3	Vinyl wainscot & drywall	Corridor 3 wall	None
6132-1-4	2’ X 2” ceiling tile	Room 6	None
6132-1-5	**TSI pipe run 4”**	**Room 8, Domestic water line**	**2% Chrysotile**
6132-1-6	**TSI pipe run 4”**	**Room 8, Domestic water line**	**2% Chrysotile**
6132-1-7	TSI pipe elbow 3”	Room 7, Domestic water line	None
6132-1-8	Drywall joint compound & textured surfacing	Corridor 2 wall	None
6132-1-9	Drywall joint compound	Room 13 wall	None
6132-1-10	2’ X 2” ceiling tile	Room 13 ceiling	None
6132-1-11	**Window glazing compound**	**Room 5 window**	**3% Chrysotile**
6132-1-12	2’ X 2” ceiling tile	Room 5	None
6132-1-13	Drywall joint compound	Room 4	None
6132-1-14	2’ X 4’ ceiling tile	Room 4	None
6132-1-15	**Window glazing compound**	**Room 3 window**	**3% Chrysotile**
6132-1-16	**Window glazing compound**	**Room 2 window**	**3% Chrysotile**
6132-1-17	2’ X 2” ceiling tile	Corridor 1	None
6132-M-18	**TSI pipe run 4”**	**Room 9, HVAC piping**	**50% Chrysotile**
6132-M-19	TSI pipe elbow 4”	Room 9, HVAC piping	None
6132-M-20	**TSI pipe run 3”**	**Room 9, domestic water piping**	**2% Chrysotile**
6132-M-21	TSI pipe elbow 3”	Room 9, domestic water piping	None
6132-M-22	**TSI pipe run 4”**	**Room 9, domestic water piping**	**2% Chrysotile**
6132-M-23	TSI pipe tee 4”	Room 9, domestic water piping	None
6132-M-24	**TSI pipe run 4”**	**Room 9, HVAC piping**	**60% Chrysotile**
6132-E-25	**Exterior window frame caulking**	**Exterior window frame, at joint with CMU**	**2% Chrysotile**

6132-E-26	**Exterior window frame caulking**	**Exterior window frame, at joint with CMU**	**2% Chrysotile**
6132-SP-27	TSI pipe run, 6”	Steam pit	None
6132-SP-28	TSI pipe elbow 8 ‘	Steam pit	<1% Chrysotile
6132-SP-29	**TSI cloth jacket & mastic**	**Steam pit at fittings**	**6% Chrysotile**
6132-R-30	**Silver coated multi-layer flashing**	**Roof, at square metal vent**	**5% Chrysotile**
6132-R-31	**Silver coated flashing cement**	**Roof, at square metal vent**	**Total 2% Chrysotile, 7% on silver layer**
6132-R-32	Built-up roofing	Roof field, layers of tar and felt under stone ballast	None
6132-R-33	Tar/felt?	Roof field, applied to concrete roof deck under BUR and foam-glass insulation	None
6132-R-34	Built-up roofing	Roof field, layers of tar and felt under stone ballast	None
6132-R-35	Tar/felt?	Roof field, applied to concrete roof deck under BUR and foam-glass insulation	None
6132-1-36	Drywall joint compound & textured surfacing	Corridor wall, Duplicate (QC) sample of 1-8	None
6132-E-37	**Exterior window frame caulking**	**Exterior window frame, at joint with CMU, Duplicate (QC) sample of E-25**	**4% Chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
Ft. BRAGG, BUILDING 6132

Material Description	UNITS	Area Descriptions								
		APPLICABLE SAMPLE NUMBERS	EXTERIOR	INTERIOR	MECHANICAL ROOM	ROOF	EXTERIOR PIPE PITS			TOTALS
Floor Tile & Mastic	S.F.	Assumed Asbestos		2150						2150
Roof Flashing Materials	S.F.	R-30 R-31				800				800
TSI 3” OD Pipe Run	L.F.	M-20		60	30					90
TSI 3” OD Pipe Fittings	Ea.	Assumed Asbestos		15	15					30
TSI 4” OD Pipe Run	L.F.	1-5 1-6 M-18 M-22 M-24		25	45					70
TSI 4” OD Pipe Fittings	Ea.	Assumed Asbestos		7	13					20
TSI 6” OD Pipe Run	L.F.	Assumed Asbestos					40			40

TSI 8” OD Pipe Fittings	Ea.	SP-28 SP-29					10			10
Stickpin Mastic	S.F.	Assumed Asbestos		65						65
Caulking Compound	L.F. ½” wide	E-25 E-26 E-37	250							250
Window Glazing Compound	L.F. 1” wide	1-11 1-15 1-16		600						600

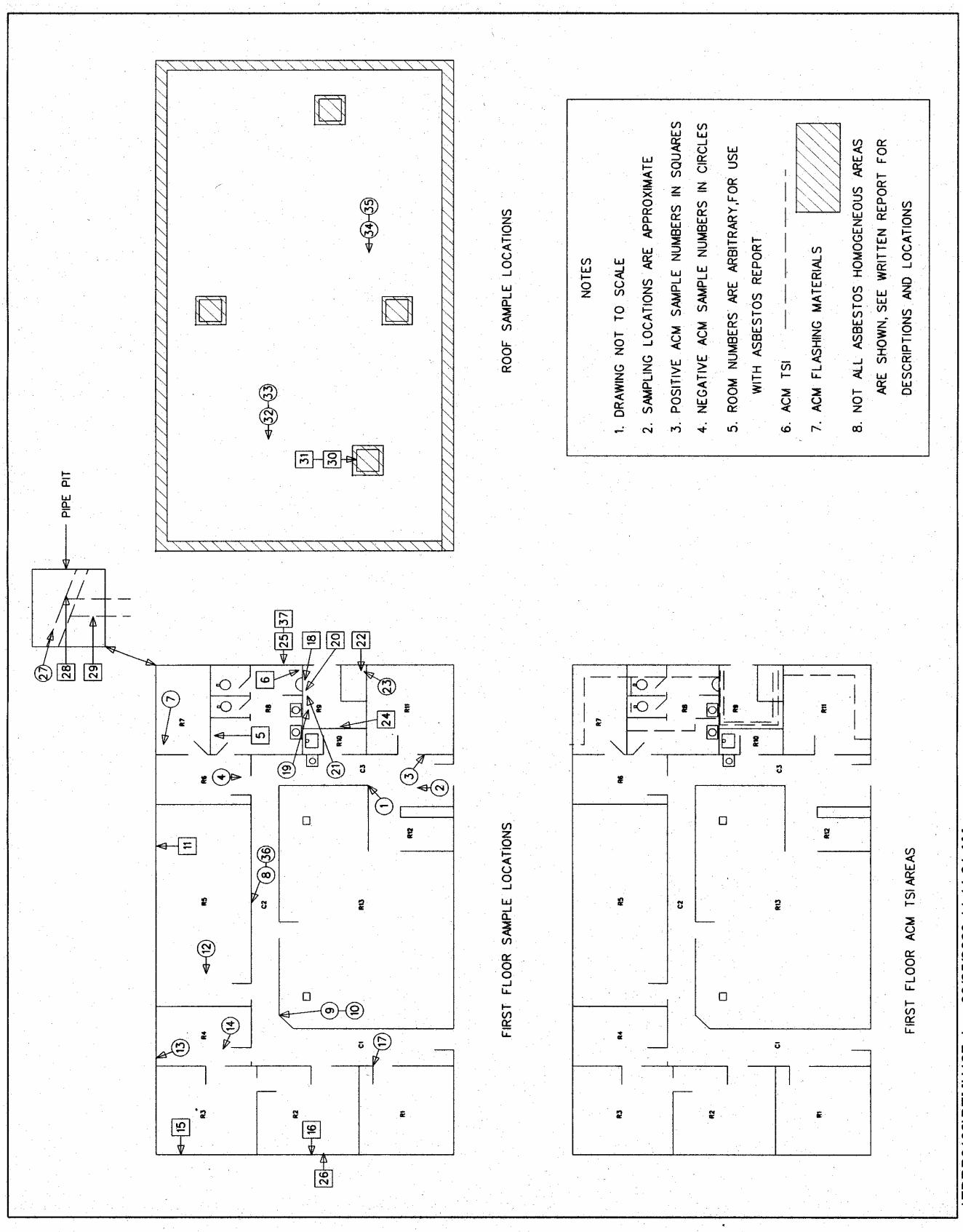
S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot, Ea. = Each

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
Ft. BRAGG, BUILDING 6132

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
TSI	TSI Pipe Run	Yes 2-60%	200 L.F.	Friable	Good-Significantly Damaged	High
TSI	TSI Pipe Fittings	Assumed 6% in mastic in pipe pit	60 Ea.	Friable	Good-Significantly Damaged	High
Miscellaneous	Floor Tile & Mastic	Assumed	2150 S.F.	Non-friable	Good	Low
Miscellaneous	Roof Flashing Materials	Yes 5-7%	800 S.F.	Non-friable	Good	Low
Miscellaneous	Stickpin Mastic	Assumed	65 S.F.	Unknown	Unknown	Low
Miscellaneous	Caulking Compound	Yes 2-4%	250 L.F.	Non-friable	Good	Low
Miscellaneous	Window Glazing Compound	Yes 3%	600 L.F.	Friable	Damaged	Moderate

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot, Ea. = Each

Figure 1


NOTES
1. DRAWING NOT TO SCALE
2. SAMPLING LOCATIONS ARE APPROXIMATE
3. POSITIVE ACM SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ACM SAMPLE NUMBERS IN CIRCLES
5. ROOM NUMBERS ARE ARBITRARY, FOR USE WITH ASBESTOS REPORT
6. ACM TSI
7. ACM FLASHING MATERIALS
8. NOT ALL ASBESTOS HOMOGENEOUS AREAS ARE SHOWN, SEE WRITTEN REPORT FOR DESCRIPTIONS AND LOCATIONS
PIPE PIT
ROOF SAMPLE LOCATIONS
FIRST FLOOR SAMPLE LOCATIONS
FIRST FLOOR ACM TSI AREAS
...\FBRB6132\BEMH127.dgn 08/05/2003 11:11:01 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

4/3/2003

Subject:
Hygeia Project Number: A0303074
Client Project Number/Name: Job No 7757 /Ft. Bragg Bldg 6132

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 3/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP# 102087-0
Texas Dept. of Health # 30-0232
Commonwealth of Virginia # 3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0303074

Client Project Number/Name: Job No 7757 / Ft. Bragg Bldg 6132

Analyzed: 3/20/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-1	A0303074-01	White	Cons.	Yes									100%	

Comment: Joint Compound: NAD. Rest: NAD. No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-2	A0303074-02	Brown	Cons.	Yes						40%	20%		40%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-3	A0303074-03	Gray	Cons.	Yes						10%			90%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-4	A0303074-04	Brown	Cons.	Yes						40%	20%		40%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-5	A0303074-05	Brown	Cons.	Yes	2%					48%			50%	

Comment: Asbestos Detected.

Hygeia Project Number: A0303074
Client Project Number/Name: Job No 7757 / Ft. Bragg Bldg 6132

Analyzed: 3/20/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-6	A0303074-06	Brown	Cons.	Yes	2%					48%			50%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-7	A0303074-07	Multi	Cons.	Yes							70%		30%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-8	A0303074-08	Multi	Cons.	Yes									100%	

Comment: Joint Compound: NAD. Rest: NAD. No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-9	A0303074-09	Multi	Cons.	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-10	A0303074-10	Brown	Cons.	Yes						40%	20%		40%	

Comment: No Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-11	A0303074-11	Brown	Cons.	Yes	3%								97%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-12	A0303074-12	Brown	Cons.	Yes						40%	20%		40%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-13	A0303074-13	White	Cons.	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-14	A0303074-14	Brown	Cons.	Yes						40%	20%		40%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-15	A0303074-15	Brown	Cons.	Yes	3%								97%	

Comment: Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-M-21	A0303074-21	Brown	Cons.	Yes							70%		30%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-M-22	A0303074-22	Brown	Cons.	Yes	2%					48%			50%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-M-23	A0303074-23	Brown	Cons.	Yes							70%		30%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-M-24	A0303074-24	Brown	Cons.	Yes	60%					10%			30%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-E-25	A0303074-25	Brown	Cons.	Yes	2%								98%	

Comment: Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-E-26	A0303074-26	Multi	Cons.	Yes	2%								98%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-SP-27	A0303074-27	Brown	Powdery	Yes						30%			70%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-SP-28	A0303074-28	Brown	Cons.	Yes	<1%						70%		30%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-SP-29	A0303074-29	Brown	Cons.	Yes	6%					24%			70%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-R-30	A0303074-30	Black	Cons.	Yes	5%					15%			80%	

Comment: Asbestos Detected.

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-R-31	A0303074-31	Multi	Cons.	Yes	2%					48%			50%	

Comment: Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-R-32	A0303074-32	Black	Cons.	Yes						70%			30%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-R-33	A0303074-33	Black	Cons.	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-R-34	A0303074-34	Black	Cons.	Yes									100%	

Comment: No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-R-35	A0303074-35	Black	Cons.	Yes									100%	

Comment: No Asbestos Detected.

Hygeia Project Number: A0303074
Client Project Number/Name: Job No 7757 / Ft. Bragg Bldg 6132

Analyzed: 3/20/2003 by WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-1-36	A0303074-36	Brown	Cons.	Yes						70%			30%	

Comment: Joint Compound: NAD. Rest: NAD. No Asbestos Detected.

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6132-E-37	A0303074-37	Brown	Cons.	Yes	4%								96%	

Comment: Asbestos Detected.

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

A0300

Project: Ft. Bragg Bldg. 6132	Job No.: 7757
Sampler: Tim Jones	Analysis: PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
3-11-03	6132-1-1	45450	Drywall Joint Compound / Texturing
	6132-1-2	45451	Ceiling Tile
	6132-1-3	45452	Vinyl Wainscot, Drywall
	6132-1-4	45453	Ceiling Tile
	6132-1-5	45454	TSI Pipe Run
	6132-1-6	45455	TSI Pipe Run
	6132-1-7	45456	TSI Elbow
	6132-1-8	45457	Drywall Joint Compound / Texturing
	6132-1-9	45458	Drywall Joint Compound
	6132-1-10	45459	Ceiling Tile
	6132-1-11	45460	Window Glazing Compound
	6132-1-12	45461	Ceiling Tile
	6132-1-13	45462	Drywall Joint Compound
	6132-1-14	45463	Ceiling Tile
	6132-1-15	45464	Window Glazing Compound
	6132-1-16	45465	Window Glazing Compound
	6132-1-17	45466	Ceiling Tile
	6132-M-18	45467	TSI Pipe Run
	6132-M-19	45468	TSI Elbow
	6132-M-20	45469	TSI Pipe Run
	6132-M-21	45470	TSI Elbow
↓	6132-M-22	45471	TSI Pipe Run

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	3-15-03	1400	Thalee Pattaway	03-17-03	1300
Thalee Pattaway	03-18-03	1030 ~~0900~~	C. Cail	3/18/03	

Comments: Fax results to Tim Jones @ 910-436-9483

Room #204

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project: Ft. Bragg Bldg 6132	Job No.: 7757
Sampler: Tim Jones	Analysis: PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
3-11-03	6132-M-23	45472	TSI Tee
	6132-M-24	45473	TSI Pipe Run
	6132-E-25	45474	Caulking Material
	6132-E-26	45475	Caulking Material
	6132-SP-27	45476	TSI Pipe Run
	6132-SP-28	45477	TSI Elbow
	6132-SP-29	45478	TSI Cloth Jacket + Mastic
	6132-R-30	45479	Multi-Layer Roof Flashing
	6132-R-31	45480	Roofing Cement
	6132-R-32	45481	Built-Up Roofing
	6132-R-33	45482	Roofing Tar
	6132-R-34	45483	Built-Up Roofing
	6132-R-35	45484	Roofing Tar
	6132-I-36	45485	DryWall Joint Compound / Texturing
↓	6132-E-37	45486	Caulking Material

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	3-15-03	1400	Thalas Pattanayak	03-17-03	1300
Thalas Pattanayak	03-18-03	~~0900~~ 1830	C. Cell	3/18/03	

Comments: Fax results to Tim Jones @ 910-436-9483

Appendix C

Certifications and Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

Georgia Institute of Technology

This is to certify that

Michael Stephen Ruth

has attended and satisfactorily passed an examination covering the contents of a Continuing Education Course entitled:

Inspecting Buildings for Asbestos Containing Materials (Initial Course for Building Inspectors)

meeting the Federal EPA AHERA Model Accreditation Plan requirements for Building Inspectors (TSCA Title II).

October 16-18, 2000
Dates of Attendance

October 18, 2000
Examination Date

October 18, 2001
Expiration Date

Georgia Tech Research Institute
Electro-Optics, Environment and Materials Laboratory
Atlanta, Georgia 30332
Phone: (404) 894-7430; FAX: (404) 894-1267

578-78-6898
Social Security Number

Robert D. Schmitter
Course Director

2897
Certificate Number

© GOES 440

LITHO IN U.S.A.

Medical University of South Carolina

College of Health Professions

Program in Environmental Health Sciences

19 Hagood Avenue, Charleston, South Carolina 29425 (843) 792-5315

Certifies that

MICHAEL RUTH

Attended and Satisfactorily Completed

Asbestos Inspector Refresher

conducted October 31, 2002 through October 31, 2002
and passed an exam on October 31, 2002.

AbInsp-r27120-17203	4	578-78-6898	T.A. Rowland, III
Certificate Number	Contact Hours	ID Number	Program Director
October 31, 2002	October 30, 2003		T. A. Rowland III
Exam Date	Certificate Expires		Instructor

AUGET LARGIENDO
UNIV. MED. CAR. AUS. 1824

This certifies that the above recipient has completed the requisite training for Asbestos Certification under TSCA Title II.

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Hazardous Building Materials Survey

Building No. 6132 Fort Bragg, North Carolina

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Building No. 6132 Fort Bragg, North Carolina

by Timothy A. Jones

Final Report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Hazardous Building Materials Survey Report

Introduction

Background

Building No. 6132 is a single story structural concrete frame structure. Original walls are constructed of concrete masonry block units (CMU). Newer interior partition walls have been added at some point in time and are constructed of wood framing covered with gypsum drywall. The floor system is concrete slab on grade covered with at least two layers of vinyl tiles. The roof system is of built-up design; it is constructed from the top down with stone ballast over multi-layered tar and felt membrane over foam-glass insulation over a tar layer on the concrete roof deck. The buildings primary use is as an office building.

Description of study

Investigation

This report documents the hazardous building materials survey of Building No. 6132 at Ft. Bragg, North Carolina conducted on 11 March 2003 by USACE Savannah District employees Tim Jones and Mike Ruth and includes only building materials located at the time of inspection. This survey was conducted in general accordance with the Statement of Services for Hazardous Building Material Inspections developed by Ray Willingham, retired, USACE Savannah District. The investigation includes a visual identification and location of such items as: fluorescent and mercury-vapor lights; battery back-up exit lights and emergency lights; mercury-containing thermostats and switches; refrigerant containing air conditioners, water fountains and ice makers; above and below ground storage tanks; transformers; built in chemical type fire suppression systems; smoke detectors; and lead building materials excluding lead based paint. Other hazardous building materials not listed above may also be included at the discretion of the inspectors. Asbestos is excluded from this inspection as it is covered separately in an asbestos inspection report.

Conclusions

The following information gathered during the survey of Building 6132 is presented in attached information:

a. *Light Count:* The fluorescent and mercury vapor light count results are presented in Table 1.

b. *Lead Building Materials:* Inspection of the building revealed lead in the plumbing drainage and vent piping system used as pipe joints. Lead flashings are used at the pipe penetrations through the roof. Details are outlined in Table 2.

c. *Compressed Refrigerant Gas:* Seven window air-conditioning units were located in Building 6132. One drinking fountain was located in Building 6132. All of these units are assumed to contain refrigerant gas that should be recovered prior to demolition.

d. *Above and Underground Storage Tanks:* None of either were located associated with Building 6132.

List of Tables

Tables

TABLE 1
Ft. BRAGG BUILDING 6132
FLUORESCENT AND MERCURY LIGHT FIXTURES

AREA IDENTIFICATION	# & TYPE LIGHTS PRESENT	DESCRIPTION OF LIGHTS
Interior	27	4 bulb, 4 foot long fluorescent fixtures with two 8” X 2” ballasts each
Interior	3	2 bulb, 2 foot square fluorescent fixtures with 1 ballast each

TABLE 2
Ft. BRAGG BUILDING 6132
LEAD BUILDING COMPONENTS

BUILDING COMPONENT	DESCRIPTION	LOCATION	ESTIMATED NUMBER
Hot poured lead pipe joint	In plumbing drainage, waste and vent piping	Under slab and in plumbing chase walls	50-100
Lead Pipe Flashings	Roof flashing	Roof	5